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# MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association and Minneapolis Surgical Society*

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## FEBRUARY 1923

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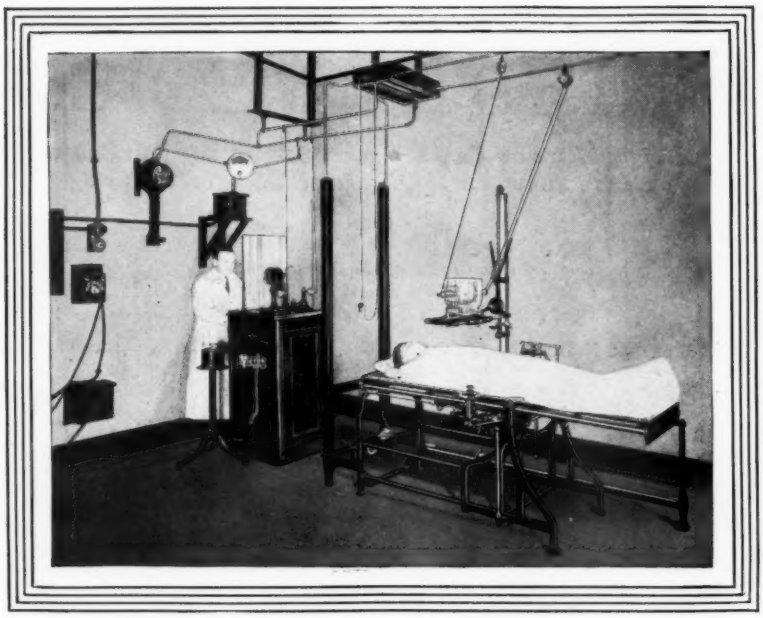

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# MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association*

VOL. VI FEBRUARY, 1923 No. 2

## ORIGINAL ARTICLES

### SOME RECENT ADVANCES IN THE PHYSIOLOGY OF THE ALIMENTARY TRACT*

A. J. CARLSON, Ph.D., M.D.

Professor of Physiology in the University of Chicago

*Chicago*

Mr. Chairman and Members of the Minnesota State Medical Association: Those of you who graduated from the medical school twenty-five or more years ago may wonder what business a physiologist has at the annual meeting of your State Medical Association, because at that time there was very little physiology in the majority of our medical schools or anywhere else in this country. Doubtless you performed some experiments on the frog's heart and the frog's gastronemius, and you made test tube experiments with pepsin and hydrochloric acid. You may have tested the urine for sugar and albumin, and you attended a few lectures in physiology, which you promptly forgot in the stress of medical practice. Physiology in the medical school today is different; but for me to say that physiology is, or is going to be, of major importance in your art may merely be an expression of my egotism, for it is a fact that there is not today a physiologist on the staff of any important hospital in the United States. There are pathologists, bacteriologists and bio-chemists, but no physiologists. Are we such able instructors that we have made every medical graduate a physiologist? Has physiology nothing to contribute to the art of medicine? Or is the present unsatisfactory relation due to mutual myopia?

Last night one of our major prophets in medicine (Dr. Mayo) said that up until now medicine had been largely guided by the deadhouse; that is, by the end results of pathologic processes, and that the next big medical advance must be guided largely by physiology. He also expressed the hope that the physiologist might graduate from the frog, the turtle, and the dog to *man*. That gradation has taken place during the last generation; now we use the frog, the turtle, the dog, and man,—in fact every animal form that can contribute to our knowledge of life, and life includes disease. But how can physiology render its greatest service to medicine under the present policy of mutual exclusion if not silent contempt? If the physiologist is branded as "academic," as a mere impractical theorizer, and the medical practitioner put in the category of an ordinary business man, it is because the physiologist and the physician do not realize that their ideals and aims are identical.

I propose to speak briefly on some of our experimental work on the gut carried out by our Chicago group—work that seems significant in relation to some of the practical problems that you are facing in your every-day practice.

As your illustrious dean (Dr. Lyon) intimated, we have been fortunate in having a second Alexis St. Martin. We now have a third. Dr. Lyon spoke of a second Beaumont but I do not think we have produced a second Beaumont. Beaumont is an inspiration—and a challenge to every doctor in "Gopher Prairie" and other prairie towns of the country. When I look over this audience and bigger medical audiences, and think of the thousands of medical men that are turned out from our medical colleges every year, I do not feel particularly proud that we have not raised scores and scores of Beaumonts. There are many Alexis St. Martins; there is no end of exceptional opportunities. Those of us who are interested in the progress of science and the welfare of society from the aspect of health feel keenly the present waste of research material, even in our best hospitals.

In our laboratory we have for some time been interested in the problems of motor control of the gut, in secretion of the digestive juices, in intestinal toxemia, and in visceral pain. I shall try to discuss briefly some of our findings on these several points.

One of the surprising things that we worked out on man, not only on Alexis St. Martin, but on all

*Banquet address at the Annual Meeting of the Minnesota State Medical Association, Minneapolis, October, 1922.

types of normal men of all ages, was the fact that, contrary to what seemed reasonable, the empty stomach exhibits on the whole greater tonus and motor activity than a filled stomach. This experimental work has not only been extended to other mammals, but also to birds, reptiles, frogs, fish, and down to the snail. So despite the recent protests in this city by a distinguished politician against the unity and continuity of living things, there is unity of motor phenomena in the gut all through, and I have no doubt that the balloon test would put Mr. Bryan's stomach in line with the rest of us, even if his mental tests should indicate absence of evolution. There is practically continuous motility and continuous secretion in the empty stomach of the normal person.

What is utility of this activity? I presume nature sometimes looks to us unreasonable because we do not know all the facts in the case. Some of these motor phenomena of the empty stomach have a wider biological significance than digestion. The contractions of the nearly empty stomach give rise to the major part of the sensations of hunger, while in gastric and duodenal ulcers these same contractions give rise to the major portion of the ulcer pains. Now, this may sound like rank heresy to many of you who have been brought up on the simple theory of the chemical pain of gastric and duodenal ulcer. This theory is simple and easily understood, but does it square with the facts? Acid irritation of a sore on the skin gives rise to pain. Acid gastric juice in the sore on the gastric or duodenal mucosa should likewise cause pain, and since we can temporarily abolish the ulcer pains by putting alkalies into the stomach, that seems proof positive, and many doctors have considered this a closed chapter. Now, gentlemen, very few chapters in physiology or medicine are closed. When we come to examine the foundation for many generalizations, we find things that were considered established facts are really not so. It is a fact that the ulcer pains may be present without gastric acidity. It is a fact that you can temporarily stop the ulcer pain by putting acid in the stomach. I am not saying that the normal contraction of the empty stomach in the region of the ulcer, where the nerves are probably hyperexcitable, is the whole story, because in very intense ulcer excerbations the pain is not periodic, or, if periodic at all, the periodic pains are superimposed on a continuous pain. Whether this continuous pain has a chemical factor we do not know, but one element undoubtedly is a spasm of the pylorus, in which the acid gastric juice may play a rôle.

I have nothing new to communicate on the genesis of pyloric spasm, but we have found that anything and everything we put into the stomach (warm or cold water, acids, alkalies, food, mechanical stimulation) temporarily inhibits the stomach tonus and contractions. One factor, therefore, in the control of the ulcer pain by alkalies, water or food, is the inhibition of the stomach contractions by the material we introduce.

We have some new facts on the motor control of the esophagus and the cardia. It is a curious fact that the lower third of the esophagus (the smooth muscle part) and the cardia have four sources of external innervation; that is, motor and inhibitory nerve fibres from the two vagi and the two splanchnic nerves. This is true for the dog, the cat and the rabbit. As in the case of the heart, the inhibitory fibres to the cardia seem to be in tonic action, for on sectioning the vagi the cardia may pass into prolonged spasm.

Many of us had accepted the generalizations that the vagus system and the sympathetic system have opposite actions on the gut; that the vagi carry motor fibers from the esophagus down to the ileocecal valve, and that the splanchnics carry inhibitory fibers for the stomach, the small intestine, etc. This generalization seems to have no real foundation. If this is so, the clinical classification of neurotic patients into "vagotonics" and "sympatheticotonics" must also be revised.

We have shown that the stimulation of the sensory nerves distributed to the mouth and the pharynx usually causes reflex inhibition of the esophagus and the cardia. Conversely, appropriate stimulation of nearly every sensory nerve in the viscera or the visceral organs, that is, the gall bladder, stomach, small intestine, large intestine, urinary bladder, or the sciatic nerve usually causes a reflex spasm of the cardia and lower esophagus, just as we found to be the case of the lungs in lower animals. These facts may aid in the analysis of the types of spasms of the esophagus and cardia in man that are not due to local injuries.

On the secretory side we have some new facts. We did a great deal of work on Mr. V., the second

Alexis St. Martin, and on dogs, with the so-called stomachics or bitter tonics. We wanted to see if these ancient and honorable remedies increased hunger, appetite, gastric secretion, or food consumption, and digestion. This work was done on the dog in health, on the cachectic dog, normal men, and on cachectic patients. The results were essentially negative. The bitter tonics did not consistently increase hunger and appetite, gastric secretion or food consumption.

These are the facts. I am not saying that you should quit prescribing bitters in these dry times, but you should at least try in a scientific way to find out whether you actually accomplish anything by their use. It is true the bitter tonics may be as harmless as the "laying on of hands," but are we doing our duty as doctors (i. e., teachers) in passing on the tradition?

In view of the clinical literature on hyperacidity and hyperacid symptoms, we were surprised to find that normal gastric juice has an acidity equal to the highest acidity ever recorded by competent clinicians in so-called hyperacid patients. Moreover, gastric juice of this normal high acidity (about 0.4-0.5 per cent (HCl) produces no disease symptoms, at least if the gastric motor and sensory mechanisms remain normal. The old view that normal gastric juice has an acidity of only 0.2 per cent HCl is an error, and it seems to be a fact that under no condition of disease is the stomach capable of secreting a juice of a greater than normal acidity. We have all degrees of hypoacidity down to complete anacidity, but the conception of gastric hyperacidity is certainly an error of fact, and probably an error of interpretation. This does not mean that the patient who comes to you with so-called hyperacid symptoms does not actually experience the pains and distress. Samples of his gastric content will usually show some retention, but the acidity will be normal or subnormal. But you say since evacuation of the stomach or administration of alkalies may temporarily allay the symptoms, does that prove their acid genesis? I think not. There is no evidence that gastric juice can induce symptoms of disease, except when acting on motor and sensory mechanisms that are abnormal. Gastric hypersecretion does exist. We can produce some types of it experimentally, and curiously enough we have found in the dog that this gastric hypersecretion (i. e., an excess quantity of normal gastric juice) is produced by alkalies, the ordinary alkalies that you use on your patients. There is gastric hypersecretion after fasting, and in some cases after producing experimental ulcers in the stomach or duodenum. But hypersecretion induces no disease symptoms if the motor and sensory gastric mechanisms remain normal.

When I took up this work on the secretion side I was very much impressed by the beautiful researches of Pavlov. Pavlov made the second great contribution to gastric physiology, following Beaumont. He has also made some mistakes, but I hope all of you have studied his classic monograph. I do not see how you can be good physicians without knowing (and practicing) a good deal of physiology any more than we can be good physiologists without knowing a good deal of disease. Pavlov lays great stress on the appetite gastric juice. In order not to produce indigestion in my second Alexis St. Martin, I carefully put back nearly all the appetite gastric juice collected on the mastication of a meal. One day I removed all the appetite juice without replacing any of it. Mr. V. ate his meal and was not the worse for it. The total absence of the appetite juice had no effect. This was repeated over a long period, taking out of the stomach every cubic centimeter of appetite secretion before Mr. V. put the food in his stomach; he developed no disturbance of gastric digestion and the evacuation of the stomach remained normal. This means two things: First, that under normal conditions we secrete very much more gastric juice than we need. In the second place, I think it means that where we find so-called dyspepsia or gastric indigestion, it is probable that the disturbance of secretion in the way of hyposecretion, and achylia, is not an important etiologic factor. The disturbance is primarily motor, not secretory. The fact that chronic achylia is compatible with health seems to indicate that the hydrochloric acid of the gastric juice is not necessary for normal gastric motility. If this position is correct, what about our pepsin-HCl therapy in gastric disorders?

Time does not permit me to extensively refer to the recent beautiful work of two members on our staff (Luckhardt and Dragstedt) on various types of intestinal toxemias (intestinal obstruction, acute dilation of the stomach, parathyroid or gastrointestinal tetany). It now appears settled by experiments on dogs that tetany parathyropriva is due to toxins from the gut developed by the action of the colon group of bacteria on the proteins of the food.

This seems to me a very important fact in relation to idiopathic epilepsy and other hypermotile states in man. And contrary to the generally accepted view the parathyroid glands do not appear to be necessary to life, if proper therapy is carried out during the first five to six weeks following removal of the glands. These parathyroidectomized dogs live in apparently good shape for years but with an unstable nervous system or lessened resistance to toxins similar to the patient afflicted with idiopathic epilepsy. I believe the whole field of clinical tetany must be reanalyzed from the point of view of these new facts, both as to etiology and therapy.

Our Chicago group has also been interested in the genesis and chronicity of gastric and duodenal ulcers. The major difficulty for the physiologist is the production of chronic ulcers in animals; nature provides the ulcers for you, clinicians, but your major difficulty is your inability to determine, even by laparotomy, when an ulcer is actually healed, since the absence of recognizable ulcer symptoms does not mean a healed ulcer. We have not gone far in this field, but far enough to seriously question the efficacy of prevailing therapies (fasting, bland diets, alkalies, gastro-enterostomy) to cure chronic ulcers; cure, in the sense of removing the factors that make for chronicity. These measures, plus hygienic living, will, in the majority of cases, control at least some of the ulcer symptoms, but only the ignorant patient and the superficial doctor are satisfied with that.

We have some new facts bearing on the chemical control of gastric and pancreatic secretion. It has been generally accepted on the basis of the work of Bayliss, Starling, and Edkins in England, that the acid gastric juice acting on the duodenal mucosa produces a hormone (secretin), which, absorbed into the blood, acts as a specific stimulant for the pancreas. Analogous experiments on the stomach led to the view that some of the substance in the protein food, and possibly the HCl of the gastric juice, acting on the gastric mucosa give rise to a hormone (gastrin), which acts as a specific stimulant of the gastric glands. Now, a group of workers in our laboratory (Luckhardt, Koch, Keeton, Ivy) have shown that the secretin of Bayliss and Starling and the gastrin of Edkins are artefacts and have nothing to do with the normal secretion of the pancreas and the stomach. Secretin and gastrin are drugs, not hormones, so the problem of how the food in the gut initiates gastric and pancreatic secretion is back to the status of twenty years ago, when Pavlov and his pupils took the position that we are dealing with local nervous reflexes. This chapter in physiology, like many other chapters, reminds us of the fact that the physiologist is only human. He makes mistakes by faulty experimental methods and faulty interpretations, just as you do in your diagnosis and your therapy of disease.

These are, in brief, some of the problems our Chicago group have been interested in the last few years. We have added a few new facts, and scrapped a few errors. There is still a long and increasingly difficult trail ahead, and we are on the way, even though the university policy of "work and starve" and the allurement of a fairer financial return in practice thin our ranks and threaten to deprive our science of its share of first-class men.

Those who work and think feel at times that there is at present a fundamental incompatibility between the science and the art of medicine. Successful practice today seems to demand of the doctor a degree of positiveness or dogmatism fatal to scientific work. It is an every-day observation that even the most absurd medical fad and fakery can, at least for a time, be "put over" on the laity with persuasive dogmatism. To compete on that basis means an end to medical progress and a return to the jungles of superstition. I refuse to believe that critical candor, a sine qua non in the science, spells failure in the art of medicine. On the contrary, I believe that the only remedy for the present confusion of laymen on medical matters is not less intelligent honesty, but more candor on our part.

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## MEDICAL MEN AND INSTITUTIONS OF PETROGRAD IN 1917 AND 1922*

MICHEL ZLATOVSKI, M.D.
*Duluth*

Petrograd in 1917 was a beautiful and rich metropolis of 2,000,000 people, with institutions for commerce, education and culture, and a varied social life. In medicine, it was one of the most

*Presented before the St. Louis County Medical Society, Duluth, December, 1922.

richly endowed of Europe. Here was the distinguished military medical academy, which graduated many renowned professors—Mechnikow, Botkin, Pavlow and others. It had a medical college exclusively for women, an institute for physicians who went there to further their medical knowledge, an institute for experimental medicine with Professor Pavlow at the head of it, and a generous curriculum.

Safeguarding the health of Petrograd's inhabitants, were 27 hospitals, more than 100 dispensaries and private clinics, among them the renowned gynecological institute of Professor Otto. The city could number 5,000 doctors and professors of medicine, and one hundred establishments that dispensed drugs exclusively.

Five years have passed under the rule of the Bolsheviks, and what are we today? Numerically, the medical academy and the University for women have at present more students than at any time in their history, but the application of the students to their studies is not near as thorough as before. In fact, there is no comparison. The Bolsheviks have declared that the medical colleges are open to all, that no previous training, no diploma is necessary, and that, besides being free of any cost, each of the students would be assured a livelihood —that each would be provided with rations and spending money. The result was that the medical colleges were flooded with both men and women a great many of whom did not have any previous training at all, and so sweeping and assuring was the declaration of the Bolsheviks, that some of the men and women who began studying could not even sign their own names.

This mob filled the grounds and buildings with shouts, laughter and hilarity. They were practically all communists, and of the proletariat, as they termed themselves, and suspected the instructors of being counter-revolutionists and opposed to Bolshevik rule. The students selected committees among themselves to watch the movements of their teachers. The result was that true academic spirit was made impossible.

Besides, it was soon plain that the Bolsheviks could not keep the rosy promises of not only food, but spending money besides, and the result was that the students sought other means to gain a livelihood, such as speculations and physical labor. Lectures, which did not hold any interest for most of them, were not attended. A part of the professors had fled from Russia, a part of them died from starvation and the prevalent diseases of the time, and the remainder, starved and weakened, were compelled to seek other means of employment besides the classroom, and often it was hard labor. Professor Pavlow once told his classes that he could not continue his world-famed experiments with animals because chopping wood and other hard labor had robbed his hands of their skill. Professor Kravakow, renowned pharmacologist, worked on a commonly tilled land plot, several miles from his home, carrying his crop of potatoes home on his back.

The academy and the university were not heated, the water pipes burst, there was no gas, and electricity was only allowed a few hours each day because there was insufficient fuel for the generators. The laboratories were empty, for their contents had been sold by students to speculators, the expression commonly used after the revolution, when referring to business men. Of course, learning was made impossible.

The experimental institute had no intellectual strength. The animals used for experiments died for lack of food. The head of the experimental institute, Professor Pavlow, who received an offer from the Rockefeller Institute to come here, and received offers from England and other countries, was not permitted to leave Russia by the "tcheka," or the extraordinary committee, which administered the affairs of Russia. Even the appeal of Maxim Gorky to the administration on behalf of Professor Pavlow, who said he could not continue his work in Russia, failed to change the resolve of the "tcheka" not to permit him to leave. It was my good fortune to have been often in the Professor's company, and knew of his hopelessness as to improvement in the situation.

From 1917 to 1920, the institute for the furthering of the education of physicians was closed. The doctors were too much concerned with getting bread and too impoverished to continue their studies. Last winter, the Bolshevik regime drafted 1,000 doctors, most of them students who had attended the University during the three years of open-wide education, to give them more training than they had received. They were allowed during this time the following rations: one pound of bread a day; for the entire month, two pounds of

sugar, four pounds of herring, and two pounds of salt, regardless of whether they had a family or not. And as these rations were distributed irregularly, they could not devote their time and energy to their studies exclusively. So, to get more food, the stronger of them worked as stevedores on the wharves and at other hard labor, while the weaker ones sold newspapers, stockings and other articles on the streets of Petrograd. With the class rooms two or three degrees centigrade, and practically empty, the professors had no inclination to lecture. Then, the student doctors were sent to the devastated parts of Russia to give medical aid to the inhabitants, whose ills were lack of food. Characteristically, the Bolshevik regime gave each of these doctors 1,000,000 rubles for traveling expense, when it took 2,500,000 to pay for the dray to the station.

Of all the hospitals in Petrograd, there remained only six when I left last May, and they were in terrible circumstances. The temperature of the rooms was seldom more than two degrees. The operating rooms were unclean, and there were no medicines, or clean dressings. The customary ration for the patient was a half pound of black bread and soup from herring. The nurses, hungry and worn-out, did not care for the sick. The attendants, mostly ignorant and starved, often stole the food of the patients, and treated them cruelly. An acquaintance of mine, who was a patient at Botkin's hospital for contagious diseases, was beaten by an attendant because she required more attention than usual, and I could see the marks of the cruelties. The death rate in the hospitals was very high and the sick would not go there, with the result that the spread of contagious disease increased. The private clinics were robbed at the time they were nationalized, and today they are closed because the government has no means to operate them. Only a few drug dispensaries remain, and those few are practically empty. It is a fact that the drug stores did not even have castor oil or boric acid. Now, you can understand the position of the Russian doctor, who could not prescribe medicines, and certainly could not order a diet or recommend a rest for his starved and toiling patients.

Still worse is the political and material condition of the physicians. The Bolsheviks have declared that they, along with the other "intellegentia," are bourgeousie and counter revolutionists. Many were killed, such as the famous Dr. Shingarow, who, while sick in a hospital, was put to death by a gang of sailors, and Dr. Grigoriem, wantonly killed by a group of soldiers. In the Central Hospital of the Red Army, where I was drafted to serve, Dr. Gramatchakow, the head of the hospital committee which examined convalescent patients, and Dr. Gelfin were both shot without trial on orders of the "tcheka" as a result of false charges of a gypsy woman and a man of low character, who, after a quarrel, accused one of the doctors of making a wound on his leg to prevent being drafted into the service, and the other for issuing a discharge certificate. Later the man and woman were also shot. Other medical men were confined for years in prison, including Professor Fyodorown, a noted surgeon.

Medical societies were forbidden and their funds for the benefit of the widows and orphans of doctors were seized. In their place, the Bolshevik regime created the "Union of Medical Sanitary Workers," and besides physicians equal membership was extended to nurses, the hospital watchmen, its janitors and firemen, its attendants and others engaged in minor employment about a hospital.

Over the doctors were placed ignorant, overbearing fellows, termed commissars. They often interfered with the physicians and made their life unbearable. Clashes between the commissars and the physicians were frequent but always to the advantage of the commissars.

The material condition of the doctors was even worse. Private practice was prohibited. Physicians were permitted to work only in hospitals and other places under the control of the Bolsheviks. Given insufficient amounts of food, they were compelled to seek other employment. They became easily susceptible to disease, and in the winter of 1920 about 200 physicians died. In the hospital where I was employed twenty-six of the fifty physicians were afflicted with typhus fever and six of that number died. When the epidemic waned in Petrograd, the physicians were sent to those districts where the fever was still raging, disregarding the personal welfare of the medical men or their home ties. In 1920, one hundred and fifty physicians were sent from Petrograd to the Bashkerier republic in the Ural mountains, where the pestilence called "tchuma" (bubonic plague) raged. It was

said that for each physician that was sent to this republic, which was not under the control of the Bolsheviks, they received one wagonload of flour and five oxen.

Now, conditions are changed. Doctors are permitted to have a private practice, and instead of rations are given money. But the improvement is small, for the residents of Petrograd are so poor that they can not pay for the services of the physician and the money itself is worthless. In February, 1922, my wages for that month from the Government were 400,000 rubles and the price of a pound of sugar was 500,000 rubles; a pound of butter, 700,000 rubles; a pound of bread, 30,000 rubles. In March my salary was doubled, and I was getting 800,000 rubles a month, but the prices then were: sugar, 1,000,000 a pound; butter, 1,200,000 a pound; and bread, 60,000 rubles a pound. In May, the doctor's fee for a visit was usually 1,000,000 rubles, but he had to make 40 visits to buy a pair of shoes and one hundred and twenty visits to buy a suit of clothes. You can find doctors who carry soap, thread, shoe laces, stockings, etc., for sale, in the same case that they formerly carried their instruments. There are doctors who have opened various stores, and others are clerking.

To encourage attendance of doctors, the "Union of Medical Sanitary Workers" offered ten pounds of apples and forty pounds of potatoes to each of the doctors who attended one meeting in the summer of 1921. In the winter of that year, each of the doctors in the service of the government was given a sort of bonus, consisting of a summer hat, a bed sheet, a towel, and a couple of shirts. Once, in the winter of 1920, the Red Cross of Norway gave to each of the doctors of Petrograd 20 pounds of fish, a half pound of cocoa and two pieces of soap. Doctors slept standing before the distributing place of the Red Cross in Petrograd that they might be there when the distribution began in the morning.

It is hoped that America, which is taking the greatest interest in the terrible condition of Russia, will come to the aid of the Russian doctors through associations of their colleagues in America. The doctors of Russia are in need of food and clothes. They are in need of medicine, instruments, and medical literature. And the sooner help comes the better—for time lost means all lost.

## A REVIEW OF 153 CASES OF BLADDER STONE REMOVED BY LITHOTRITY*

JOHN L. CRENSHAW, M.D.
Section on Urology, Mayo Clinic
*Rochester, Minnesota*

The ease with which even an inexperienced surgeon can perform cystostomy for stone has had a tendency to reduce the number of litholapaxies, since there are relatively few surgeons who are expert with the lithotrite. Granting that complications necessitating cystostomy occur in probably more than 50 per cent of cases of stone in the bladder, the results of lithotrity are so much better that such a procedure should be followed unless definitely contraindicated. The contraindications are:

1. A stone of such large size that the jaws of a lithotrite will not embrace it.

2. A stone so nearly filling a contracted or deformed bladder that the lithotrite jaws cannot be opened.

3. Prostatic hypertrophy, bladder tumor, diverticulum, or other complications which would necessitate cystostomy following the removal of the stone. In cases of prostatic hypertrophy and vesical calculus in which there is some contraindication to cystostomy, litholapaxy can usually be performed under sacral or general anesthesia in spite of the prostatic obstruction. There are many cases, also, where a small prostatic hypertrophy is increased in size by the congestion due to the bladder stone and all residual urine and symptoms will disappear following the removal of the stone; this type of case should unquestionably have a litholapaxy. Stones in a deep diverticulum with narrow orifice require cystostomy, while those in shallow pockets can often be crushed and the pocket opened widely into the bladder by fulgurating the orifice.

4. If the nucleus of the stone is known to be of such physical character that it cannot be readily freed from the lithotrite, unless the operator is prepared, if necessary, to perform a cystostomy at the same place and time. For example: A rubber catheter head was broken off and left in the bladder of a woman, following an extensive resection of the sigmoid for carcinoma, and a stone formed before she was in condition to have the catheter head removed. The stone was partially crushed with a

*Read before the Minnesota State Medical Association, Minneapolis, October, 1922.

fenestrated lithotrite, but enough of the rubber was driven through the window to make it impossible to free the lithotrite from the stone, and it was impossible to remove the instrument from the bladder with the stone attached. After many futile attempts to free the instrument, the lithotrite was delivered as far as possible and the rubber then cut along the outside of the blade of the lithotrite with a pair of curved scissors inserted through the urethra. After removing the lithotrite the stone was so crushed that it and the rubber were easily removed through the urethra by a forceps. A second example was a man with a tight urethral stricture, who had years before broken off in the bladder a portion of a home-made sound composed of paraffin and chewing gum, around which a hard stone had formed. This stone was eventually removed without serious results, but as the nucleus and fragments adhered to the lithotrite at every bite the instrument had to be removed, cleaned and reintroduced ten or twelve times before all fragments were small enough to pass through a cystoscope. A cystostomy would have been better in this case.

5. If a stone is attached to the bladder wall, and if any operation has previously been performed on the bladder or adjacent structures. One of our two fatalities followed litholapaxy in a patient who gave a history of a herniotomy a year before. With the aid of the cystoscope a stone was found attached to the wall of the bladder. The stone was removed quickly and easily with a lithotrite; a suture, which apparently was the nucleus of the stone, came away without any appreciable force with one of the fragments. There were no unusual symptoms until the third day, when the patient died rather suddenly. Necropsy was refused, but clinically the diagnosis was peritonitis resulting from the removal of the extravesical portion of the suture.

6. Stones with a sharp foreign body, such as a hairpin or knife blade, as a nucleus, unless proved to be free in the bladder with the aid of a cystoscope. For example: a patient recently observed had a large stone in the bladder in which there was a wire hairpin. From the roentgenograms it appeared that both stone and pin could be removed with the lithotrite, but the cystoscope showed both ends of the pin protruding from the stone for three-fourths of an inch, and these were firmly fixed in the wall of the bladder. Subsequent cystostomy revealed that the pin had almost penetrated the wall of the bladder, and removal with the lithotrite might have caused a perforation.

The physician's lack of skill in the use of the lithotrite is usually cited as a contraindication to litholapaxy. With this I heartily disagree. Stone in the bladder is a chronic condition, and every case where litholapaxy is otherwise feasible can be referred to a urologist who is competent, and the patient should not be unnecessarily subjected to the higher mortality of cystostomy.

### MAYO CLINIC SERIES

In a recent study of 606 cases of vesical calculus examined at the Mayo Clinic in fourteen years, the following facts were noted: A diagnosis of stone was made by roentgen-ray examination in 345 (76.83 per cent) of 449 cases, and by cystoscopic examination in 445 (98.88 per cent) of 450 cases. Vesical stone was undiagnosed and was discovered at operation for hypertrophic prostate (17) or stricture (2) in nineteen cases (3.13 per cent). In other words a positive diagnosis was made of stone by roentgen-ray or cystoscopy, or both, in 587 (96.86 per cent). In the nineteen undiagnosed cases a negative roentgen-ray report was given in six, no roentgen-ray examination was made in thirteen, a negative cystoscopic examination was made in three, and no cystoscopic examination was made in sixteen (Tables 1 and 2).

TABLE 1

RESULTS FOLLOWING LITHOLAPAXY AND CYSTOSTOMY

| | Litholapaxy | Per cent | Suprapubic Cystostomy | Per cent | Other Methods or Stone Not Removed |
|---|---|---|---|---|---|
| Men | 138 | 90.19 | 385 | 97.5 | |
| Women | 15 | 9.8 | 10 | 2.5 | |
| Total | 153 | 25.24 | 395 | 65.18 | 58 |
| Recurrence of stone | 12 | 7.84 | 18 | 4.55 | |
| Mortality | 2 | 1.3 | 34 | 8.6 | |
| Days in hospital | 4.2 | | 14.27 | | |

TABLE 2

TWELVE CASES IN WHICH STONE RECURRED FOLLOWING LITHOLAPAXY

| Cause of the original stone | Cases | Cause of the recurring stone | Cases |
|---|---|---|---|
| Disease of the prostate | 4 | | 6 |
| Stone in the kidney | 3 | | 2 |
| Stricture of urethra | 2 | | 1 |
| Cord bladder | 1 | | .. |
| Cystitis with deformity | 1 | | 2 |
| Diverticulum of the bladder | 1 | | 1 |
| | 12 | | 12 |

Most of the recurrences were due to causes which, either on account of general health, or local condition, could not be removed, and in three cases were the result of pathologic conditions which developed after removal of the original stone. Often several years had elapsed between removal of the original stone and the recurrence. In order to guard against recurrences precautions as follows must be taken:

1. Roentgen-ray and cystoscopic examinations must be made after litholapaxy to be sure that all fragments are removed.
2. Infected kidneys should be treated with pelvic lavage or nephrectomy if necessary, and focal infections removed.
3. If there are stones in the kidney they should be removed.
4. Cystitis should be relieved by lavage and topical applications.
5. Causes of retention such as prostate or stricture must be removed if possible, or, if these cannot be removed, as in the case of atonic bladder, the regular removal of residual urine should be practiced.
6. Diverticula, if they retain urine, should be removed.
7. Hygienic and dietetic measures that benefit the general health should be adopted.

### ANALYSIS OF TWO CASES FROM THE SERIES IN WHICH THE PATIENTS DIED FOLLOWING LITHOLAPAXY

Case A24902, a man, aged fifty-one years, died suddenly on the second day after removal of a stone attached to the wall of the bladder and with a suture as a nucleus. Herniotomy had been performed one year before. Necropsy was refused. The cause of death was apparently peritonitis.

Case A209326, a man, aged fifty-four years, had sloughing of the bladder and prostatic urethra with extravasation of urine sixteen days after operation. At necropsy right pyelonephritis with multiple abscesses and left hydronephrosis were found. This patient, with severe infection of the entire urinary tract and in poor general health, is the type that should have, besides general treatment, a permanent urethral catheter fastened in place immediately following litholapaxy and left in place until the cystitis disappears, as pointed out by Barney.*

The success with which caudal anesthesia can be used in cases of vesical calculus greatly increases the scope of litholapaxy. Many patients with irritable bladders, nervous temperaments, large calculi, and so forth, who formerly would have required general anesthetics and in consequence usually had a cystostomy, can now have a very easy litholapaxy. It must be remembered, however, that the area affected by caudal anesthesia includes not only the urethra but the musculature of the bladder and lower ureter, and adequate instruments, such as some form of suction apparatus, are necessary in order to remove the fragments of stone from the bladder after crushing. Without caudal anesthesia it is easier to fill the bladder with water and allow contraction to force the fragments out through a tubular cystoscope. In females or in males with large urethras, large fragments of stone may be evacuated with ease through a Braasch cystoscope of 29 French caliber, consequently reducing the amount of crushing necessary. When only a few fragments so large that they will not pass through the cystoscope remain, these can often be reduced to the necessary diameter with a strong specimen-taker, thus obviating the necessity of reintroducing the lithotrite. One objection to a general anesthetic for lithotrity applies equally to a caudal anesthetic, namely, that in the absence of local sensation there is no intimation from the patient when the wall of the bladder is touched, and the operator must be doubly careful that the jaws of the lithotrite are free from the wall before tightening them.

Large fragments in the bladder, or stones in a diverticulum, can often be more rapidly and easily removed under observation with a modification of Young's rongeur than with the ordinary lithotrite. A non-fenestrated lithotrite should never be used, as fragments of stone often become lodged between the blades, and prevent closure, causing considerable difficulty in removing the instrument, and consequent damage to the urethra.

### CONCLUSIONS

1. The mortality of litholapaxy is much lower than that of cystostomy, and the period of hospitalization shorter.
2. The difference in mortality more than compensates for the moderate increase in recurrences following litholapaxy.
3. The use of caudal anesthesia and permanent urethral drainage renders the lithotrite available to a large group of patients who would formerly have been subjected to the greater risk of cystostomy.

*Barney, J. D.: Observations on the treatment of vesical calculi; an analysis of 455 cases from the Massachusetts General Hospital. Boston Medical and Surgical Journal, 1922, cxxxi, 462-469.

# THE BRONCHOSCOPIC EXTRACTION OF FOREIGN BODIES FROM THE AIR AND FOOD PASSAGES WITH A REPORT OF TWENTY-FIVE CASES*

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Twenty-five years ago, the first bronchoscopic extraction of a foreign body from the lung was accomplished by Killian, who sought to demonstrate that such a difficult operation could be successfully performed.

After satisfying himself that such an operation could be successfully performed, his next step was to fashion and to perfect the necessary instruments and to evolve proper methods for using them. While Killian was so engaged, other workers in different parts of the world were conducting similar experiments; and the result is that, at the present time, we have available several types of instruments as well as a fairly well-defined technique.

Jackson, in a recent article, states that the principal problem of broncho-esophagoscopy for foreign body removal is this: "The mechanical problem of disentanglement, disengagement or version of the foreign body" so that it will be in such a position that it can be removed. When bronchoscopy was in its infancy, the great problem confronting the operator was to insert the instrument and to locate the foreign body; disentanglement or disengagement was not taken into consideration: it was merely a question of find, grab and pull, regardless of consequences. The well-intentioned efforts of many of the earlier operators were disastrous. The bronchoscope is a difficult instrument to use safely, as was demonstrated in an institution with which I was connected at one time. In one instance, a bronchus was ruptured by a very excellent operator; in another instance, the esophagus was ruptured; in a third instance, there was a rupture of the stomach. These fatalities happened under the hands of trained men—not careless or inexperienced operators.

There are two types of instruments in general use: those with a proximal light, as Bruhning's; those with a distal light, as Jackson's. Some men make use of either, or both, but it is my experience that the Jackson type is more satisfactory with small children—most of the foreign body cases occur in children. In adults, for examination purposes, especially of the esophagus, I prefer the Bruhning, as the lumen of the tube is larger.

The proximally lighted instrument contains a much larger electric lamp than is found in the distally lighted type and it will take the current from the rheostat in general use with little or no danger of burning out. In about seventy-five broncho-esophagoscopies I have never yet had the light burn out; and some of these examinations lasted for a considerable length of time. The lamp in the distally lighted instrument is so delicate that a battery should be used rather than the rheostat and an additional disadvantage is the fact that a double set of lights is necessary while inserting the bronchoscope through the laryngoscope. If this double set of lights were attached to rheostats, a short-circuit might result.

Careful consideration should be given to the type of anesthetic employed. Jackson, it is true, can, with his miraculous skill, remove a foreign body from the lung of a child in a few seconds and it is his advice that no anesthetic whatever be used. But to the bronchoscopist of average ability it is more often than not an advantage to have the patient with muscles relaxed, particularly in cases where the foreign body is large or has sharp edges. It cannot be controverted that ether adds to the danger of respiratory failure as a result of pressure by inordinately large foreign bodies. There are cases in which there seems to be very little contra-indication to a general anesthetic; but in others a real indication at times exists. In the case I am about to describe, a general anesthetic seemed to be advisable.

A boy twelve years old was referred to me by Dr. Douglas Wood. Reaching into some weeds for a lost ball, a sand burr attached itself to his finger. As his other hand was encumbered with a baseball glove, he attempted to remove the burr with his teeth with this result: He aspirated the burr. Vomiting immediately set in and the lad was unable to speak; there was some coughing, but no cyanosis nor difficulty in breathing. The father, a physician, was not unduly alarmed at the time and not until a week had elapsed did he realize that his son was not reacting as he should. The persistent loss of voice led him to examine the larynx, where he discovered the sand burr embedded in the right vocal cord.

The spasm of the laryngeal muscles was very pronounced

*Read before the Hennepin County Medical Society, October 2, 1922.

and every movement of the throat produced pain which augmented the spasm. The use of a local anesthetic in this case might have dislodged the foreign body, in which event there was nothing to prevent its falling into the trachea. With the use of ether, the spasm, cough and pain could readily be controlled. It was employed; the burr was removed; the boy returned to his home that evening; recovery was complete.

In the case of adults, local anesthesia is often sufficient, particularly in esophageal work: in such cases it is necessary to anesthetize the pharynx only, as the esophagus is insensitive. The insensibility of the esophagus is conclusively demonstrated by the fact that, in swallowing a hot liquid, there is no burning sensation after it passes the pharynx until it reaches the stomach.

A patient should never be in an upright position while a foreign body is being extracted because of the possibility of its being dislodged and falling into a position still more inaccessible. In my opinion, the safest and most satisfactory position is that evolved by Boyce—a position that Jackson advocates and recommends. The neck is bent in such a way as to make straight the curve in the cervical spine and, at the same time, to permit the head being turned laterally whenever necessary during the manipulation of the tube. In this connection I wish to emphasize the fact that no mean order of skill is required of the assistant to maintain the patient in the Boyce position. Good teamwork is of great importance in that it greatly ameliorates and obviates the difficulties of passing, and of working through, the tubes.

Time is an important factor in bronchoscopy, particularly in the case of young children; a half an hour is as long as one should work. It is advisable that a timekeeper be appointed before the operation in order that the operator may be apprised when thirty minutes have elapsed. Even if the efforts of the surgeon are almost crowned with success, it is safer to stop then and to make another attempt later. This holds good, although there are cases where it is necessary to use the bronchoscope repeatedly, as in a case I saw with Dr. McCannell, of Minot, North Dakota, where a child aspirated a head of wheat into the bronchus. After its removal, so much secretion formed continuously that it was necessary to aspirate through the tube every day, and occasionally several times daily, in order to keep the bronchi open.

If nothing but food were put into the mouth, foreign body cases would be rare and infrequent, as only three per cent result from aspirating food and, in such cases, the food has been improperly prepared for digestion, either in the cooking or in the masticating. Foods which disintegrate quickly and readily—bread, meat or fruits—are usually coughed up without causing trouble. Many cases are recorded of bronchoscopic searches for foreign bodies of this nature, but, as a general rule, no foreign body is encountered. Two cases such as this have come under my observation. The first was a case, referred to me by Dr. J. S. Reynolds, of a man twenty-eight years of age, who swallowed a piece of chicken bone. He experienced pain in swallowing for the next twenty-four hours. Roentgen-ray examination was negative; esophagoscopy was also negative. The second case was that of an infant sixteen months old, referred to me by Dr. E. D. Anderson. The child had choked on a piece of bacon at the breakfast table. Although part of the bacon was recovered by the mother, the child wheezed and coughed for the rest of the day. The baby was not cyanotic, but was restless and sleepless. I saw the child at about 9 P. M. and found the esophagus clear, the vocal cords normal and the trachea clear. No search was made of the bronchi. The baby had no further symptoms.

There are various ways in which foreign bodies are aspirated, but the most usual one is this: while holding a foreign body in the mouth, children laugh and play, causing it to travel to the back of the pharynx; this induces a cough, the first stage of which is a long, deep inspiration with the glottis wide open, permitting the object to pass into the trachea. Certain foreign bodies, such as dust or soot, are so minute and infinitesimal that all of us, particularly dwellers in a city, inhale them every day; but they are provided for automatically—either encysted or expectorated. But what these defenses can do for us is limited and larger foreign bodies will always produce complications such as pulmonary abscesses, if allowed to remain in the lung indefinitely. For this reason, no case of a suspected foreign body should be dismissed until it is conclusively demonstrated that it is absent by physical examination, roentgen-ray and bronchoscopy. The fact that an exploring finger encounters nothing in the throat does not necessarily prove that no foreign body is present, as such a procedure might be the means of pushing the object from the laryngo-pharynx into the larynx.

It is of the utmost importance that a complete and accurate history of the accident be obtained, whenever it is possible to secure it. The first manifestation of a foreign body in the trachea is a paroxysm of coughing which may, or may not, be associated with cyanosis or marked difficulty in breathing. This is followed by a period of quiescence, which may last for only a few days, but which has been known to continue for months or even years. Many observers are deceived at this time into believing that no foreign body is present. Dr. E. D. Anderson referred to me a male infant fourteen months old who had experienced a sudden and severe coughing spell which abated after the mother patted him on the back. As his brothers and sisters were at that time suffering with colds and coughs, no further attention was paid to the infant until two days later when he started in with another severe fit of coughing and appeared to be quite sick. Dr. Anderson was called and found the child's temperature to be 104. His examination disclosed suppression of breath sounds over the right lung, similar to the atelectatic lung of the new-born. The child became progressively worse and had choking spells with severe cyanosis and marked retraction. No foreign body history could be obtained until at this juncture the mother admitted that the child was eating peanuts when first taken with his coughing spell. The diagnosis was now made of a foreign body in the right bronchus. Upon my arrival, the child was unconscious and cyanotic, being kept alive by means of oxygen inhalations and artificial respiration. A 5 mm. Bruhning tube was passed, the larynx and trachea were found to be clear, the child stopped breathing, which made it necessary to withdraw the tube slightly, starting respiration again. The tube was now passed as far as the bifurcation and pus was seen to come from the right bronchus. The child died. A post-mortem performed by Professor Bell, of the University of Minnesota, revealed a piece of peanut in the right bronchus just beyond the bifurcation, with much local reaction and a small spot of pneumonia.

It is possible that a history might disclose that a foreign body was coughed up, but that the symptoms still persist. The inflammatory reaction following the presence of a foreign body usually subsides very rapidly after its removal; but when the physical signs of obstruction to the bronchus persist, a bronchoscopy should be performed: first, to ascertain if a residue of the foreign body remains; second, to remove it, if possible.

A girl two years of age was referred to me by Dr. Houston, of Arago, Minnesota. Four days earlier, the child aspirated a piece of peanut, resulting in a choking spell with coughing, which persisted for a period of three or four minutes. This was followed by noisy respiration, particularly after exertion. During the continuance of one attack of coughing, she raised two pieces of what appeared to be peanut. The roentgen-ray disclosed no foreign body, but it did give evidence of signs of irritation throughout the left lung, accompanied by emphysema. (Fig. 1.) Physical examination by the late Dr. Batchelder demonstrated that the left bronchus was partly occluded. Bronchoscopy showed no foreign body in either main bronchus or in any of the larger branches. The child lived for two months, at the expiration of which time she developed a septic pneumonia from which she died.

Fig. 1. Age 2 years. Peanut in right bronchus. Increased penetration of right lung due to obstructive emphysema, a valuable diagnostic sign when the foreign body casts no shadow in the X-ray.

My second illustration of this point is a case referred to me by Dr. Watson, of Royalton, Minnesota.

A father was shelling peanuts and feeding them to his two-year-old daughter. Suddenly she had a short and mild fit of coughing, after which she seemed to be normal. Seven days later, another attack of coughing set in, associated with much wheezing in the chest. On the ninth day Dr. Watson was consulted, who kept her under observation for a period of nine days, during which time she seemed to improve. At the end of that time, she underwent a severe fit of coughing, with cyanosis, with much difficulty in breathing, wheezing and a very high fever. She now coughed up five or six small pieces of peanut. This did not relieve the child to any degree and the right bronchus

gave evidence of being completely obstructed. She was sent to me for bronchoscopy. As the history disclosed that the child had coughed up five or six pieces of peanut, there was some doubt in my mind as to whether a foreign body was really present. Roentgen-ray examination disclosed no foreign body, but it did demonstrate emphysema of the right side (Fig. 1). Physical examination by Dr. Max Seham revealed complete obstruction of the right bronchus. The child was kept under observation for forty-eight hours without any noticeable change in her symptoms. Bronchoscopy showed the left bronchus clear, but the right bronchus was obstructed by a whitish slough-like material. The tube was passed through this into the lowest extremity of the right bronchus, but no foreign body was encountered. There was a slight reaction to the examination, but she seemed to be a little improved at the end of twenty-four hours. Physical examination then showed the right bronchus to be still obstructed. This condition persisted for five days longer and the child was rapidly losing ground, although there was no sign of pneumonia or pulmonary abscess. After consultation with Dr. Seham and Dr. Parker, it was decided to bronchoscope again as a last alternative. No foreign body was found. The child died and no postmortem was obtainable.

Peanuts contain some substance—the exact nature of it is not now known—which is extremely irritating to the bronchial mucosa, making the lowly peanut one of the most dangerous and irritating foreign bodies with which we are obliged to deal: we have the chemical as well as the mechanical reaction to deal with. It is possible to remove a peanut and still leave the patient with a very violent bronchitis—a bronchitis that may persist for some little time. Mechanically, the removal is fraught with great difficulties because the lumen of the bronchus may be completely filled, necessitating some manipulation to obtain sufficient space for the forceps. Gentle manipulation is necessary to prevent the peanut from being broken into minute pieces—pieces that may penetrate such tiny bronchioles that it is impossible to remove them. More widespread publicity should be given to the menace of the peanut; they should never be given to small children. The profession should be on the alert to make as early a diagnosis as possible of peanut bronchitis: any child who is eating peanuts and is taken with a sudden fit of choking and coughing, followed by chills, fever, dyspnea, cyanosis—there may be bronchial irritation but no pneumonia—such a child should be bronchoscoped without delay. Procrastination may mean more local reaction, less general resistance and a more slender possibility of removing the foreign body.

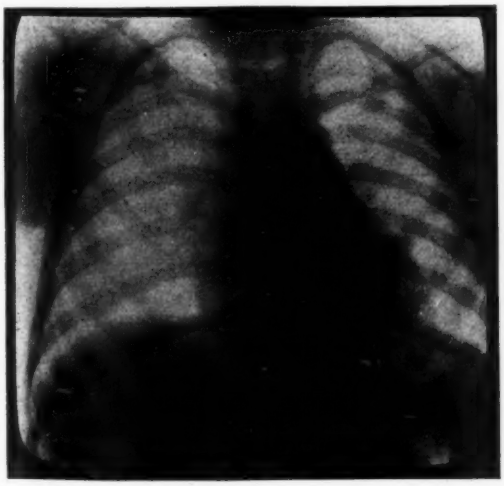

Fig. 2. Age 3 years. Piece of brass in the left main bronchus. Undiagnosed for two months. Successfully removed by upper bronchoscopy without anesthesia. (See Fig. 6A.)

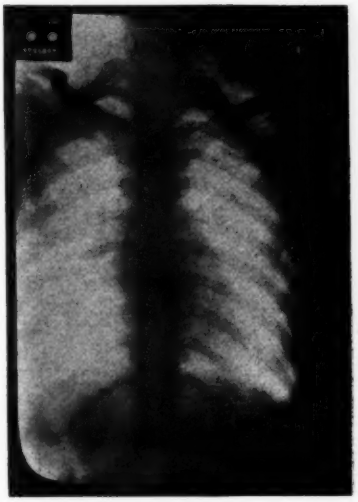

Fig. 3. Age 18 years. Wire in esophagus for eighteen months, producing signs suggestive of pulmonary tuberculosis. Successfully removed by esophagoscopy in one minute. (See Fig. 6B.)

Many cases disclose no history that might indicate the presence of a foreign body; and frequently students are graduated from very reputable institutions without being taught that a foreign body in a bronchus is capable of producing symptoms of tuberculosis, lung abscess, pneumonia, chronic bronchitis or bronchiectasis. It is well for the medical man to be on the alert for foreign bodies under such circumstances, as is demonstrated by the cases that I will detail here.

A three-year-old boy referred to me by Dr. Arthur Bratrud, of Minneapolis, and by Dr. Fisher, of Thief River Falls, manifested noisy respirations for a period of eight weeks. The onset was not sudden, cyanosis was never observed and only a slight cough was evident; the child's general condition seemed good. Dr. Fisher was now consulted. He immediately *x*-rayed the chest and made a diagnosis of a foreign body in the lower left bronchus (Fig. 2). An unsuccessful bronchoscopy was performed at Thief River Falls, after which the little boy was brought to Minneapolis. Upon his arrival, there were signs of irritation in the chest and the temperature was 102. After a wait of two days, bronchoscopy was resorted to without anesthesia, the 5 mm. Bruhnings tube being used. The foreign body was grasped, but it was too large to be elevated through the tube, whereupon, tube, forceps and foreign body were all pulled up together. Unfortunately, the foreign body was lost at the glottis. Once more the tube was inserted and this time the foreign body was successfully removed. It proved to be a piece of brass (A-Fig. 6) rolled in such a manner that it would exactly fit a bronchus. Following the extraction, the child's chest remained clear, but he experienced difficulty in swallowing and a swelling made its appearance in the left submaxillary region. On the fourth day a large retroesophageal abscess could be seen behind the larynx. After it was drained, the child made a prompt recovery.

My next illustrative case is that of an adult woman, who complained of pain in her left ear—intermittent and augmented by swallowing. The ear, itself, seemed normal and the cause of the referred pain was sought. Examination of the larynx revealed the presence of a piece of bone a half an inch in diameter imbedded in the left arytenoid cartilage. It was removed and the pain vanished.

I am indebted to Dr. J. D. Lewis, chief of the department of Laryngology of the Minneapolis General Hospital, for the privilege of observing the third case.

An eighteen-year-old girl who complained of pain in the chest and epigastrium, which came on after eating: cough, bloody sputum and loss in weight. Her chest was *x*-rayed (Fig. 3) and a wire was discovered at the level of the fourth rib. She now remembered that, while making artificial flowers 18 months ago, she had swallowed a piece of wire. As she had no symptoms at that time, she had forgotten the occurrence. A bismuth meal was given and fluoroscopy located the wire in the esophagus by reason of the bismuth that clung to it. It was shaped like a fishhook and it appeared to perforate the esophagus, pointing anteriorly and to the left. It was necessary to give a general anesthetic because of the mental condition of the patient; the esophagoscope was passed and the wire was located. Upon grasping the wire, hemorrhage ensued, which obscured the view; thereupon the wire was rotated in an attempt to make it possible to exert traction with safety. Nothing further was done at this time. A second attempt was made six days later with Dr. Josevitch at the fluoroscope that I might be apprised of the exact level of the wire. This time it was successfully removed.

In conclusion, I will give various cases in illustration of the points I have touched upon.

Dr. J. D. Lewis referred to me a child three years of age. While playing with some seed corn given him by his mother, at about eight o'clock in the morning he was seized with an attack of coughing and choking, accompanied by dyspnea. The mother rushed with her child to the city, arriving at my office while I was absent for lunch. Upon my return—about two o'clock—the child was dead.

It is my theory that the foreign body in this instance was located in the trachea, being forced into the glottis when the child coughed, causing asphyxia. This has been known to occur in cases where a child is hung up by the heels and shaken in an attempt to dislodge a foreign body.

In November, 1921, a child of twenty months developed a cough and experienced some difficulty in swallowing. The mother feared that the child had swallowed some object that had lodged in the throat. The physician could feel nothing with his finger and advised an *x*-ray. Unfortunately, the child developed scarlet fever before the *x*-ray could be taken. A cough persisted through and after the malady, upon which Dr. Eugene Williams was consulted. In conjunction with Dr. F. C. Rodda, an *x*-ray examination was made, an examination which revealed a foreign body—a lapel button, as we discovered later—in the esophagus at the level of the sterno-clavicular joint (Fig. 4). Dr. Williams and Dr. Rodda referred the case to me for esophagoscopy. Under ether anesthesia, the foreign body was found to be practically buried in granulation

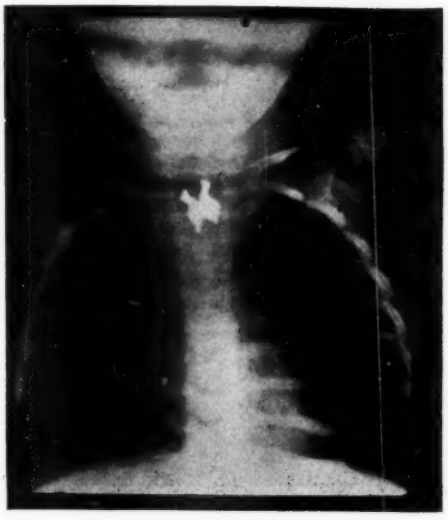

Fig. 4. Age 20 months. Foreign body (a lapel button of cross guns) lodged in the esophagus for six months. Removed by esophagoscopy in one minute. (See Fig. 6C.)

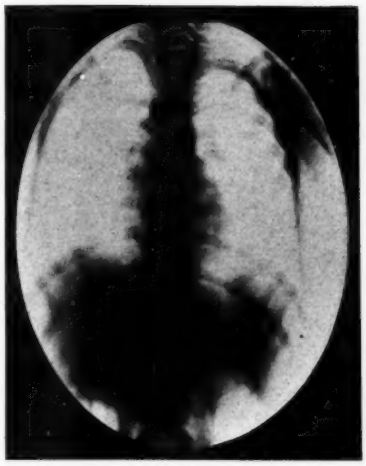

Fig. 5. Age 5 years. Two coins lodged in the esophagus. Removed one at a time by esophagoscopy in less than five minutes. (See Fig. 6D.)

tissue, which necessitated considerable manipulation before a safe plane was arrived at for the exertion of traction. The child was fed per rectum for 24 hours, after which he swallowed easily. The cough, however, persisted for a few days, but soon disappeared.

A three-year-old girl swallowed a nickel. The physician could not feel the object in the throat, whereupon he reassured the mother. For three weeks the child had difficulty in swallowing solid foods and lost weight. At the end of that time she had paroxysmal coughing spells, particularly after meals. Dr. Meland, of Warren, Minnesota, was then consulted, who *x*-rayed the chest and diagnosed a foreign body in the esophagus. He referred the case to me for esophagoscopy. The nickel was removed under a general anesthetic from the level of the cricoid cartilage. Perfect recovery resulted.

A girl six years of age referred to me by Dr. W. W. Feidt had swallowed a quarter two days previously. She had difficulty in swallowing solid foods and her voice was hoarse and husky. Fluoroscopy located the coin in the esophagus at the level of the first rib. It was removed under a general anesthetic in less than one minute and recovery was complete.

A mother saw her child of 18 months swallow a copper disk. He was brought to me and I removed it by esophagoscopy with no anesthetic. The child was taken home immediately and recovery was complete.

The next two cases differ from the foregoing in that in each instance two coins were lodged in the esophagus. In one case (Fig. 5), a separate manipulation was made for each coin; in the other, both were removed at once. A general anesthetic was used in both cases and recovery was complete.

While discussing these cases, it might be well to state that in each of the foregoing the coin cast a round shadow on the *x*-ray plate taken in the antero-posterior position, thus conclusively demonstrating that it was in the esophagus. If it were in the trachea, the vocal cords would make it impossible for the coin to assume such a position.

The next three are safety-pin cases.

A female child seven months old referred by Dr. E. D. Anderson was seized with a sudden attack of vomiting; she was sleepless, irritable and nursed poorly because of dysphagia. The guard end of the safety pin could be seen with difficulty below the right tonsil. Without anesthesia the pin was pushed down the throat until the buried point was free and then removed.

In another instance a safety pin was lodged in the esophagus of a five-year-old girl, where it had been present for twenty-four hours. It was open, with the point up at the level of the upper end of the sternum. Under ether anesthesia the esophagoscope was used, the pin was pushed down until the point was freed, whereupon the point was pulled into the tube. Then pin, tube and forceps were removed simultaneously. The child left the hospital in twenty-four hours and recovery was complete.

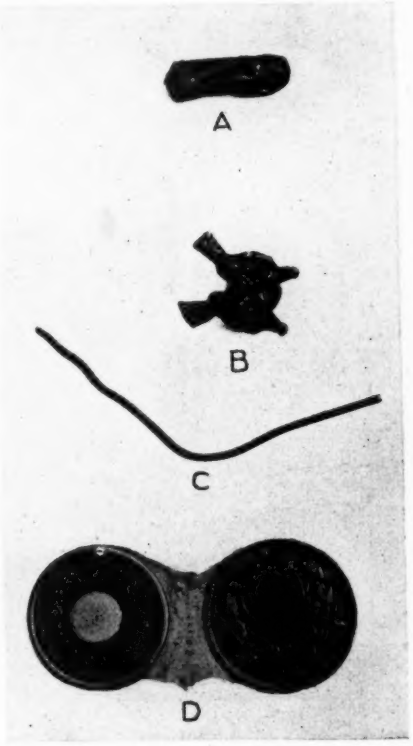


Fig. 6. (A) Piece of brass removed from left main bronchus. (B) Piece of wire removed from esophagus. (C) Lapel button removed from esophagus. (D) Two coins removed from esophagus.

A year-old boy, referred to me by Dr. Hewson, of Montrose, Minnesota, manifested symptoms of coughing and choking, while playing on the floor. His mother had not seen him swallow anything, but she suspected a foreign body. For a week his breathing was noisy and difficult, and he had no use of his vocal cords. He coughed frequently, slept very little and nursed poorly. Then he was sent to me. Physical examination was typical of laryngeal obstruction; there was no fever. *X*-ray examination revealed a safety pin open, and point up, in the larynx. It was removed under ether anesthesia in two minutes by laryngoscopy. Hoarseness and dyspnea improved at once and the child left the hospital in twenty-four hours in good condition.

The last case is that of a three-year-old girl referred to me by Dr. Rowe, of Duluth. She choked on a seed while eating watermelon and physical examination disclosed that the left bronchus was obstructed. Bronchoscopy was performed under a general anesthetic and the seed was removed from the left bronchus in seven minutes. Recovery was complete.

In the discussion of this most interesting subject, I have made no attempt to enter into exhaustive details, but I have sought merely to call to your attention its moré salient features.

DISCUSSION

Dr. J. D. Lewis: I wish to congratulate Dr. Phelps on his presentation of the subject in such a practical way and so informally and on his splendid results. Some years ago I was much interested in bronchoscopy and esophagoscpy, but in the last five or six years I have not done any of it, not having either the time or the inclination.

These conditions are frequently missed by the general practitioner when the symptoms are quite frank. There is a psychological element about them, too; they know they are difficult to manage and regard them too lightly. In all cases where the foreign body was a peanut I lost every case, as I believe Dr. Phelps has. I knew of a young woman in the city who had a safety-pin in her lung for eighteen or twenty years which was successfully extracted by Dr. Jackson, now of Philadelphia.

Dr. E. S. Strout: I want to congratulate Dr. Phelps on his interesting paper which I have enjoyed very much. I think it is well to bear in mind that a patient carrying a foreign body for many years may give a history very indefinite and be treated for tuberculosis or another malady and prove to have a foreign body in the bronchus.

Jackson reported sixty cases in which foreign bodies were extracted from what were chronic cases. In some cases lung abscesses had been produced. Cases which are very obscure and giving no definite history are very misleading. After the foreign body has been recovered the patient recalls when the swallowing actually occurred. The symptoms are so mild for a time that the instance is overlooked.

Dr. J. C. Watson: I do not want to let this opportunity pass without congratulating Dr. Phelps, and I am glad that somebody is taking up the work in Minneapolis. There is not enough of it to spread among all of us.

Dr. H. Newhart: I wish to congratulate Dr. Phelps on his interesting and illuminating paper. With the help of the *x*-ray and an early diagnosis, the bronchoscope in the hands of a skilled man leads to wonderful results.

We have already had pointed out the importance of the diagnosis on the part of the general practitioner and pediatrician. Every hour after the foreign body has been located adds to the difficulty of the operation and the outcome. With the *x*-ray it ought not to be possible to overlook the foreign body.

Dr. Dunn: If Dr. Phelps had been at home last Saturday evening, he would have had another case to report. A woman came to me saying she had swallowed a chicken bone. I called Dr. Lewis and he referred me to Dr. Phelps. He was not available. Dr. R. Wilcox then suggested that I use the stomach tube and see if I could wash the bone out. I put in a pitcher of hot water, the patient vomited and a chicken bone about one inch long was removed.

Dr. Phelps, closing the discussion: I want to thank the gentlemen who have discussed the paper for their kind words. The subject is a fairly large one and I could talk about it a whole evening. The main point after all is the diagnosis, not to forget the possibility of a foreign body in chest and esophageal conditions, and not to be misled by the period of quiescence which lasts often for some time. That is the time to be on guard.

## BILATERAL INDUCED PNEUMOTHORAX*

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Pokegama Sanatorium
*Saint Paul*

Even before Koch discovered the etiology of tuberculosis in 1882, rest was recognized as being of paramount importance in the treatment of its pulmonary form, being advocated chiefly by Dettweiler on the continent and Trudeau in this country. Shortly after the unity of phthisis had been established, European workers, notably Forlanini, began to put the lung to rest more efficiently than rest in bed could accomplish. John B. Murphy, in this country, saw the possibilities in artificial pneumothorax but did not explore this field, feeling it belonged to the realm of medicine rather than of surgery.

Not till 1912 did American students of tuberculosis realize the potentialities of collapse therapy.

*Read before the Minnesota State Medical Association in Minneapolis, Minn., October 14, 1922.

But since then it has been used extensively and has robbed progressive unilateral pulmonary tuberculosis of much of its hopelessness. Other measures such as postural rest,[1] belts around the upper chest,[2] weights on the upper chest, plaster casts[3] around the chest and slow diaphragmatic breathing[4] have been advocated to secure better pulmonary rest, but these fade into unappreciable significance before the results of induced pneumothorax, given a pleural cavity reasonably free from adhesions.

Although we have been using induced pneumothorax with the collateral lung showing slight involvement, we have shied at a progressive bilateral

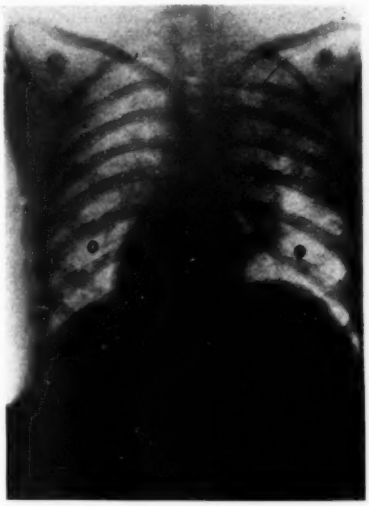

Fig. 1. Advanced tuberculosis, right lung (progressive).

case, feeling that a carefully supervised sanatorium régime was the best we could do.

Quite recently, however, a small patch of silver lining has been seen in this black ominous cloud of progressive bilateral lung tuberculosis. Barlow and Kramer[5] have nicely shown that, with an upper lobe lesion, a pneumothorax can be instituted effecting a *partial* collapse of the upper lobe, leaving the healthy lower lobe to function normally. This partial collapse results from the induction of small amounts of air into the pleural cavity and physical and contractility. Lung tissue that is infiltrated with tuberculosis obviously is less expansile and less contractile than normal lung parenchyma. This impairment of expansibility is more marked than

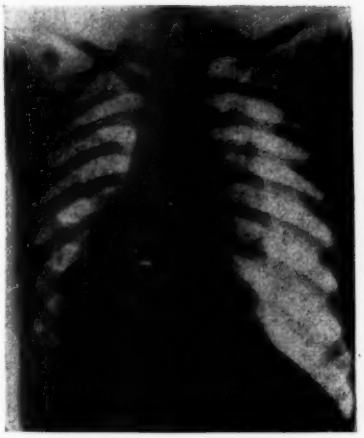

Fig. 2. Same case as Fig. 1, with right lung completely collapsed.

laws governing its disposition. The normal lung, being elastic, has a certain degree of expansibility the impairment of the contractile properties of the lung. Therefore, with the introduction of small amounts of air into the pleural space, the normal lung tissue expands as usual, forcing the air to localize over the diseased area, producing partial collapse thereof.

Most workers who have used artificial pneumothorax have noticed that in attempting to completely collapse one lung for an advanced unilateral lesion, not infrequently only a partial collapse was possible because of pleuritic adhesions and

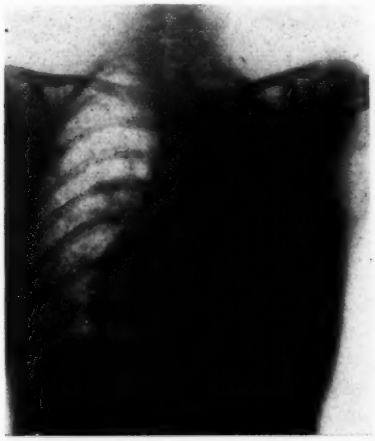

Fig. 3. Advanced tuberculosis, right lung (progressive).

furthermore that this partial collapse was sufficient to stop the progress of the disease. Such has been our experience in a number of cases. Hence the idea of a purposeful partial pneumothorax as advocated by Barlow is of more than theoretical interest because it gives us a very welcome and useful therapeutic measure in handling the bilateral case.

Fortunately we are endowed with more breathing space than we actually need. At rest, one-fifth or one-sixth of our normal lung capacity is quite sufficient to carry on adequate gaseous exchange. If, then, it is possible to partially collapse one upper lobe, leaving the lower lobe to function, why not do the same thing on the other side, if necessity demands, for the two lower lobes are more than enough to insure comfortable and sufficient respiration. Barlow was able to do this with no discomfort to the patient and with clinical improvement, and we have proved to our satisfaction that it is both possible and efficacious.

Fig. 4. Same case as Fig. 3. Complete collapse attempted but partial collapse only attained because of adhesions.

We have used the Robinson apparatus and the Floyd needle. Pleural shock, air embolus, perforation of the lung and lung rupture constitute the chief dangers of the procedure. The incidence of pleural effusion, the usual complication of complete pneumothorax, is held by Barlow to be greatly reduced with partial pneumothorax. The duration of treatment is as problematical as it is in complete collapse cases and should probably be not less than two years.

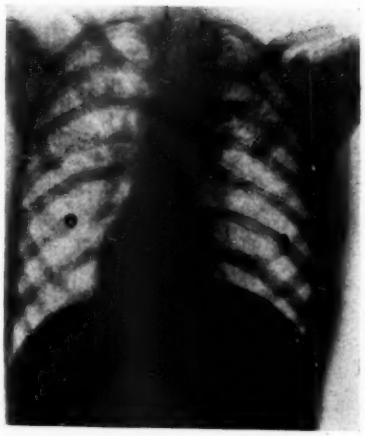

Fig. 5. Bilateral upper lobe tuberculosis (progressive).

It is vitally necessary to watch partial pneumothorax cases very closely. Frequent physical and roentgen-ray examinations must be made in order to secure uniform collapse. Without at least a fluoroscope available it is foolhardy to attempt bilateral collapse, because the most expert physical diagnostician cannot tell how completely or incompletely a lung may be collapsed, as it takes but a small amount of air between the lung and chest wall to wipe out all breath sounds. Barlow very wisely urges, before one attempts bilateral collapse, that he maintain a unilateral partial collapse for at least six weeks and also counsels strongly against

Fig. 6. Same case as Fig. 5. Partial collapse both upper lobes.

refilling both sides of a bilateral case on the same day. Both of these suggestions we have found to be quite pertinent.

It is readily seen that bilateral pneumothorax has a limited, but we believe definite, field of usefulness. It marks an unmistakable step forward in the treatment of bilateral progressive phthisis and, as such, merits use by those equipped to apply it. The lesion must be confined to the upper lobes and the overlying pleura non-adherent in order to be successful.

In presenting this subject my purpose is not to give ultimate results (years are required to do that) but rather to emphasize the fact that all cases of bilateral progressive tuberculosis of the lungs are not hopeless. We have a measure in bilateral pneumothorax which should be seriously considered before contenting ourselves merely with making the patient comfortable.

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2. Sewall and Deveney: Am. Rev. Tb., v, 547.
3. Leavitt: Am. Rev. Tb., vi, 410.
4. Knopf: Am. Rev. Tb., vi, 417.
5. Barlow and Kramer: Am. Rev. Tb., vi, 75.

DISCUSSION

DR. E. S. MARIETTE, Glen Lake Sanatorium: We have not been able to co-operate with Dr. Barlow's work and Dr. Geer's work. We have attempted it but have not been able to carry it out because of adhesions over the diseased part which prevented a collapse of the diseased part but permitted a collapse of the healthy part, just what we did not want. However, I believe that it has a field as definite as pneumothorax, even though it is much more limited, and should never be neglected.

In our group of about forty cases, where pneumothorax was indicated and failed because of adhesions, we lost about 75 per cent. Where pneumothorax was successful we lost only about 20 per cent, showing a difference of 50 per cent between the successful and unsuccessful cases of pneumothorax, which proved conclusively to us that pneumothorax has a very definite place in pulmonary tuberculosis. Recently, wherever pneumothorax was indicated and could not be given because of adhesions, we have been trying extrapleural thoracoplasty; that means that portions of the ribs below the first are removed and this allows the side to collapse. The pleural cavity is not entered. If it had not been for this, three of our patients would have fallen into the 75 per cent of failures. Now they are getting much better and are going to be included in the 20 or 21 per cent of successes.

# STATUS THYMICO-LYMPHATICUS IN INFANCY*

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Symmers[13] gives the following definition of status thymico-lymphaticus: "Status lymphaticus is a constitutional hereditary anomaly characterized anatomically by certain external peculiarities of configuration, by hyperplasia of the thymus gland and of the lymphoid tissues in other localities, by hypoplasia of the cardio-vascular apparatus, and incidentally by congenital structural defects in other viscera. Clinically the condition is not infrequently terminated by sudden death on apparently trivial provocation, oftenest in children, but occasionally in adults." This definition agrees very well with the views of the older authors, who, however, lay considerable stress on the frequent association with rickets. The earlier work on this subject was done almost exclusively by German investigators, notably Paltauf, Grawitz, Pott, Escherich, Nordmann and Kundrat. Starting about the late nineties, work was reported here, the excellent papers of Ewing and Ohlmacher being among the first.

The general trend at present is to separate thymic conditions into two main types: (1) a status thymicus, in which the thymus only is hyperplastic and gives symptoms presumably arising from itself alone, namely, dyspnea, cyanosis, and suffocative attacks; and (2) a status thymico-lymphaticus, in which besides a usual thymic enlargement there is a general hyperplasia of the lymphoid tissues throughout the body; these cases frequently terminate in sudden death.

It will not be amiss here to give a short outline regarding the development, size, and life cycle of the thymus. This gland develops as a paired organ from the third branchial clefts which unite early in fetal life.[10] The sizes and shapes vary greatly. In the fetus the gland is either cervical or cervicothoracic in location and tends to be quite broad; after the child breathes, it rapidly elongates and acquires imprints from the surrounding thoracic structures, due to increased intrathoracic pressure

*Presented before the Annual Meeting of the Minnesota State Medical Association, Minneapolis, October, 1922.

from lung expansion. It gradually becomes a thoracic organ.

The general opinion at present is that the gland is fully developed at birth, but may grow up to the age of two or three years, after which there is a slow gradual involution, often complete at or soon after puberty. In this respect, however, it is very interesting to note the recent work of Liss,[7] who in a series of 119 newborns observed by means of roentgen pictures shows that chest shadows characteristic of enlarged thymi were found in 42 per cent. These cases were without symptoms and the majority of the roentgen shadows disappeared without roentgen ray treatment during the first year. Involution is usually brought about by a fatty displacement or a simple cirrhosis. It is the cases that do not involute which terminate in the sudden deaths of adult life.

Opinions as to the size of the gland necessary to cause symptoms vary. The German investigators considered a gland weighing 20 grams as normal. Howland, whose figures come from an examination of 500 newborns and stillbirths at term, gives the average weight as 5 or 6 grams. The general opinion has been that the average weight is 12 or 13 grams, and that glands larger than 15 grams are likely to give symptoms, though not necessarily. In status thymico-lymphaticus the thymus is not always enlarged.

The thymus contains two types of cells, the reticular cells and the thymic lymphocytes. The reticular cells are considered epithelial in origin, resulting from a direct transformation of the thymic anlage. The Hassal's corpuscles, small, concentrically striated bodies peculiar to the thymus, are to be considered modified reticular cells. The lymphocytes are very susceptible to change; they are the cells which melt away by roentgen ray exposures. Eosinophilic and pseudo-eosinophilic cells have been reported by some.

The function of the thymus is not at all certain. Parke and McClure,[12] in a very extensive study of its removal in dogs, found it not essential to life. Their findings showed no detectable alteration of the tissues, change in activity or intelligence, or restriction of growth, nor any alteration in the organs of internal secretion in these thymectomized animals.

Their statements are at variance with those of other investigators who have variously claimed for the organ, regulation of blood pressure, regulation of growth, a relation to increased clot formation, and bony growth.

Pathologically, it is held that a strictly normal thymus is rather rare. It may be congenitally absent or obliterated by infections. Congenital lues is rather frequently associated with an enlarged thymus. Hemorrhages within the gland are not rare, especially in cases of sudden death with asphyxia. Hemorrhages within it are also seen in the newborn after a difficult labor; infections and phosphorus poisoning may also cause them. The usual pathology differs from the normal only in an increase of the lymphoid cells and number of follicles.

In status lymphaticus there are, however, pathological changes elsewhere in the body. There is usually a general lymphoid hyperplasia including the glands throughout the body, the tonsils and adenoids, the Peyers patches, and the solitary follicles of the intestine. If the hyperplasia is not general it is most frequently seen in the mesenteric glands and intestinal wall lymphatics, especially in the solitary follicles. The spleen may be normal or moderately enlarged, with increase in the number and size of the Malpighian corpuscles; its sinuses are usually dilated and show an increased supply of blood. The heart and vessels usually show a hypoplasia, the aorta is often smaller than normal, the vessel walls are thinned, the muscular coats especially being lacking. The blood findings are not characteristic. As before mentioned, rickets is frequently associated. Especially in asphyxia and sudden death, hemorrhages into the thymus, pericardium, endocardium and pleura have been noted. Edema of the skin, lungs, or brain, eczema and thyroid enlargement are associated at times. It is frequently associated with tetany and other convulsive disorders of infancy. It often also occurs with grand mal in epileptics. Epileptics are especially prone to sudden death.

There is usually a distinctly lowered "vital resistance," as emphasized by Paltauf, demonstrated as a lowered ability to withstand infection. An example of this may be found in some cases of apparently mild diphtheria which quickly die in spite of prompt and sufficient dose of antitoxin.

A person with enlarged thymus and status lymphaticus may run a symptomless course until an accident or infection causes sudden death.

The symptoms of thymic enlargement alone, however, are usually four:

1. Dyspnea, permanent or intermittent, more often permanent. This then increases till a suffocative attack occurs, in which death frequently results.

2. Suffocative attacks.

3. Cyanosis, paroxysmal.

4. Stridor, either inspiratory, expiratory or both. It is more often inspiratory, as the thymus may be pushed high up into the sternal notch during expiration and then act as a momentary obstruction on inspiration.

Other symptoms less often found are voice changes, varying from slight hoarseness to aphonia (due to pressure on the trachea, larynx, or recurrent laryngeal nerve). Dysphagia has been found at times; also a tumor palpable at the suprasternal notch.

The above symptoms usually appear during the first year and may even be seen during the first few weeks of life. They may develop slowly or suddenly. The causes of these symptoms are not definitely understood; some consider them due entirely to compression by the enlarged gland.

The cause of the sudden death is another subject in which a variance of opinion exists. Kopp advanced the theory that death was due to the mechanical interference caused by the weight of the thymus on the heart, lungs and great vessels, either by direct pressure or by irritation of the recurrent laryngeal nerve. Grawitz modified this theory, believing that death was due to direct pressure on the trachea at the "critical space" at the apex of the thoracic dome, especially if the head were suddenly retracted. Pott's theory was that death was due to sudden arrest of the heart itself from pressure on the trachea, pulmonary artery, and right ventricle. Paltauf also ascribes death to sudden arrest of the heart but lays the blame on the lymphatic state. He says that persons in this state have a lowered vital resistance and a particular proneness to convulsive disorders, among which cardiac or respiratory spasm or paralysis are the most dangerous. In this light, spasm of the glottis becomes a reflex respiratory spasm and thymic sudden death a reflex cardiac paralysis; both in some way dependent upon the exaggerated irritability incidental to status lymphaticus.

Symmers explains it on the ground of an anaphylaxis, premising that substances absorbed from the intestines act upon the nuclei of the lymphoid cells in the germinal follicles of the lymph nodes, breaking them down into nucleo-proteins called "nuclear dust" which sensitize the body. During the anaphylactic incubation period so initiated the tissues are again subjected to the action of the same protein released in the lymph nodes in response to destructive substances formed or introduced during an apparently trivial injury, such as an antitoxin injection, thus completing the reaction with sudden death as a result.

Other opinions as to the cause of death include the spontaneous rupture of a hypoplastic cerebral vessel or an increased tendency to vascular thrombosis.

Ohlmacher has an idea that a periodic edema of the brain may be the cause.

Physical examination emphasizes the following:

A "thymic type" has been frequently mentioned. These children are usually well nourished and noticeably good looking, these attributes gaining for them the name of "angel child." However, they will frequently be found to be rather flabby and pale, with a tendency to eczema. They stand infection badly. In older life the bodily configuration of the male simulates that of the female; axillary and other hairs scanty, pubic hair sharply defined transversely; smooth, delicate skin, narrow waist, and graceful arching of the thighs. In the female the feminine characteristics are exceptionally pronounced.

At times there is an increased mediastinal dullness above the heart on percussion, extending beyond the sternum, usually more to the left than to the right. Percussion of the gland is rather difficult and must be done very lightly, with the patient lying flat on the back with the arms above the head and head semiflexed. With the head dorsiflexed there is an increase of the anteroposterior diameter of the chest and a correspondingly narrower area of dullness.

A gland weighing 17 grams may be percussed. Percussion is, however, frequently unsuccessful. Lung findings are frequent, varying from large, moist râles to the fine crackles of a capillary bronchitis. There may be hypertrophy and dilatation of the left ventricle.

Figure 1. Roentgen ray of chest in Case 4. Enlarged thymic shadow extending down over the heart. Heart markedly enlarged, filling one-half the chest.

The roentgen ray offers us a distinct aid in diagnosis. Photographs must be carefully taken with special technic. Gerstenberger[15] has shown that the picture may vary with the position of the diaphragm, an apparently enlarged thymus on deep expiration disappearing on deep inspiration. He advises roentgen rays taken at the end of both inspiration and expiration.

Blackfan and Little[1] state that the plate should be taken with the patient lying quietly on the back with head semiflexed to insure an average depth of chest.

The treatment for an enlarged thymus is repeated roentgen ray exposures. This should also be resorted to in cases of status thymico-lymphaticus, although here of distinctly less value. The roentgen ray will act on any lymphoid structure, such as the glands, spleen, or thymus, as well as the bone marrow and the white blood cells themselves. By regulation of the dosage, either stimulation, inhibition or destruction may be obtained; the aim in thymus treatment is destruction.

Figure 2. Roentgen ray of chest in Case 5. Enlarged wing-shaped thymic shadow and markedly enlarged heart.

In the average case of enlarged thymus, improvement will be noted in twenty-four to forty-eight hours after exposure. It is possible, as has been shown by animal experimentation, to elicit changes in the gland within eight hours. For this reason roentgen ray treatment should be given to urgent cases even if in apparent extremis. Death has occurred in such circumstances shortly after a treatment, and the parents should be advised of this danger.

During a period of about two months in the early part of this year there occurred in my practice five cases of this disease. It is seldom that one man sees such a series of cases within so short a time. The courses of all were short; they all ended fatally and were autopsied. The reports of these cases are, unfortunately, not as complete as I would desire, due to lack of facilities at the time; nevertheless they are of some value.

Case 1.—Baby S., aged 8 months. April 11, 1922.

*Family and Past History.*—Essentially negative.

*Present Illness.*—Started one week before with fever for two days and a nasal discharge. Rhinitis continued without temperature till night of the eleventh. At 7 o'clock that evening appeared perfectly well, smiling and happy. It was left alone in bed. The parents returned two hours later to find it dead.

Figure 3. Posterior view of thymus from Case 4. Numerous hemorrhages over entire surface of gland.

*Autopsy Report.*—A well nourished child, no evidence of rickets, slight mucopurulent nasal discharge. Superficial lymph glands not enlarged. On opening the thorax the thymus was seen to cover the superior portion of the heart, extending a little to either side. There were two large lateral lobes, an isthmus with a lobe extending up into the neck 1 cm. above the suprasternal notch. It was rather thick antero-posteriorly and weighed 16 grams. There were numerous pin-point hemorrhages over its ex-

ternal surface and on section. The peribronchial glands were not enlarged. The lungs showed infrequent pin-point hemorrhages on the surface, but were otherwise normal in appearance. The spleen appeared large, with some apparent hemorrhages on the surface; the Malpighian corpuscles were prominent. The solitary follicles of the intestine, especially of the colon, were markedly enlarged, giving it a pebble-like appearance; intestines otherwise normal. The glands on the mesenteric attachment and those at the base of the mesentery were increased in number and size. The macroscopic appearance of the remaining organs were normal.

CASE 2.—Baby J., aged 1 month. May 27, 1922.

*Family and Past Histories.*—Essentially negative. Breast fed.

*Present Illness.*—For three nights previously the child had cried more than usual; fever was noted. On the night of the twenty-seventh it went to sleep at 11 P. M. and slept better than usual. At 4 A. M. it was seen to be

Figure 4. Posterior view of thymus from Case 1. Numerous pin-point hemorrhages over gland surface. Medium lobe extending up into the neck.

sleeping peacefully. At 6 A. M. it was found to be dead. I saw it one hour after death and performed an autopsy.

*Autopsy Report.*—The body was that of a fairly well nourished infant. There was a slight mucoid nasal discharge. None of the superficial lymph glands were palpable. The thymus covered the superior portion of the heart. It contained numerous pin-point hemorrhages throughout. The median lobe extended a slight distance above the suprasternal notch. It weighed 14.6 grams. Both pleural cavities, especially the right, contained a small amount of blood-stained serous fluid. There were several hemorrhages, the largest about 6 mm. in diameter, on the parietal pleura and the right diaphragmatic dome. Numerous hemorrhages, ranging from pin-point to 3 mm. in diameter, were present on the posterior surface of both lungs; otherwise the lungs appeared normal. The pericardial cavity contained a slight amount of serous fluid. On the anterior surface of the heart, especially around the origin of the great vessels, but also at the tip, were several small hemorrhages.

Figure 5. Section of intestine from Case 1. Marked enlargement of the solitary follicles of the intestine.

On the opening of the abdomen the omentum presented a peculiar swollen reddish appearance. A small amount of clear free fluid was present in the abdominal cavity. The peritoneum was smooth and glistening. The mesentery of the small intestine was reddish in color and contained numerous small, dark red lymph glands. There were a few petechial hemorrhages into the gastric mucosa, as well as in the intestines. The lymphoid follicles of the intestines were easily visible. The under surface of the liver gave a fine dark red, mottled appearance, apparently due to hemorrhages around the lobules. The spleen weighed 14 grams, and showed hemorrhagic blotching over the surface. There were numerous petechial hemorrhages throughout both kidneys and in the bladder mucosa. The head was opened; numerous petechial hemorrhages were found on the periosteum of the skull. The surface of the brain appeared congested, the cerebrum appeared normal, but there were petechial hemorrhages into the cerebellum.

CASE 3.—Baby D., age 9 months. May 6, 1922.

*Family History.*—Negative.

*Past History.*—Negative. It had been observed throughout most of its life at the Welfare Clinics, where its beauty and excellent physique had frequently been commented on.

*Present Illness.*—Brought in for croup, evidenced for two days previously. Examination showed a reddened throat

Figure 6. Heart from Case 4. Hemorrhages at tip and around the base.

and some stridor, both inspiratory and expiratory. Advised syrup of ipecac and steam inhalations.

Next day it was seen in the home at 5 P. M. Temperature then 100.2 degrees rectally; did not appear sick; happy. No stridor at rest but on struggling developed a moderate inspiratory and expiratory stridor. It was slightly hoarse; both ear drums were bright red. My impression at the time was that the child had a non-diphtheritic laryngitis. The mother was positive that the child's condition was improved over that of the previous day. At 11 P. M. it was sitting in bed cooing. There was no increase in stridor at 1 A. M. A few "catches" in the throat were noted at 1:40 A. M. At 2 A. M. there were several little "clicks" in the throat and the child was dead.

*Autopsy Report.*—A very well nourished and developed baby. Superficial lymph glands not enlarged. Thymus very large, covered the entire upper pole of the heart. There were a few small petechial hemorrhages at its upper pole. It weighed 27 grams. The heart and lungs showed no anomalies. The larynx and trachea showed only a mild reddening, no marked swelling. There was a frothy exudation on scraping the cut surface of the lungs, evidently some edema. The mesenteric lymph glands were practically normal in number and size. The solitary follicles of the intestines were enlarged and stood out prominently. The spleen appeared large with numerous prominent Malpighian corpuscles.

Case 4.—Baby S. R., age 2 months. April 16, 1922.

*Family History.*—Negative.

*Past History.*—Negative. Breast fed every four hours.

*Present Illness.*—Started two days before admission with temperature of 100°, a slight cough and a tendency toward listlessness. This continued until brought in to the office.

*Physical Examination.*—Child evidently sick, temperature 99° (rectal). It lay limp; the respirations were accompanied by a slight wheeze, there was retraction of the epigastrium on inspiration and an expiratory grunt. Some yellowish post-nasal discharge. The heart was found to be large, extending 1.5 cm. outside the left nipple line in the fifth interspace, and enlarged proportionately in the upper interspaces. The sounds were of poor quality, the first sound frequently absent. The liver was palpable three finger breadths below the costal margin in the midline. The breath sounds were diminished on the right side. A roentgen ray was taken as soon as the child got to the hospital. This showed an enlarged heart and a definite thymus shadow. The course of the child was rapidly downhill during its four hours hospital stay with a fatal termination. It did not receive roentgen ray treatment.

*Autopsy Report.*—A well developed boy of two months. No superficial lymph gland enlargement. On opening the thorax there was slight amount of clear greenish fluid in the pleural sacs. The thymus was large, extending well down over the auricles of the heart and to either side; it was also rather thick. There were numerous hemorrhages on its surface ranging from pin-point to 3 mm. in diameter. It weighed 23 grams. There were several small bodies taken to be accessory thymi also present. The lungs were normal in appearance except for a few small pleural hemorrhages. The heart was decidedly enlarged. There was a slight amount of clear, greenish fluid in the pericardial sac. On the heart's surface were many hemorrhages, most numerous at the base, with a rather large one, 1 cm. in diameter, near the apex.

On section the left ventricle was found to be greatly enlarged. Its walls were thickened while the cavity itself was about five times that of the right ventricle. No anomalies of the heart were found. The abdominal cavity yielded a small amount of fluid similar to that seen in the pericardium and pleura. The mesenteric glands were quite numerous but not enlarged. The liver was quite large, brownish yellow in color, bled easily, and gave the appearance of being congested. Spleen seemed slightly large and rather friable. There were areas of fine hemorrhage into the intestinal walls, the solitary follicles of the large intestine alone appeared increased in number. The kidneys showed fetal lobulations and a few petechial hemorrhages into the pelvis on the right.

Case 5.—Baby P., age 1 month. February 15, 1922.

*Family History.*—Negative.

*Past History.*—Negative. Nursed three weeks; since then Mellin's Food every three hours.

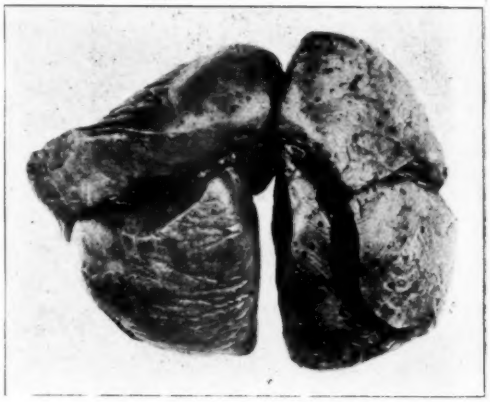

Figure 7. Lungs from Case 2. Petechial hemorrhages over the surface.

*Present Illness.*—Had had nose cold for two weeks; for the previous twenty-four hours, had been having "cramps," doubled up and became pale. There had been grunting respirations and a failure to take food.

*Physical Examination.*—A definitely sick child with a grunting respiration. Snuffles, muco-purulent post-nasal discharge. Some beading of ribs and marked craniotabes. There were no definite lung signs. Heart sounds were of fair quality. A roentgen ray of the chest showed a slightly enlarged heart without a definite thymus shadow; the plate was poor.

The child was sent to the hospital, where it passed the night without mishap. The following morning, however, it became pulseless and cyanotic with short, rapid, grunting respirations. Lung findings indefinite, the breath sounds at

the right upper posteriorly were rather high pitched and there were a few râles at the left heart border. The heart dullness was present 1.5 cm. outside the left nipple line, the sounds were muffled. It was resuscitated by a mustard pack but went into collapse again within an hour. No chest findings. Another roentgen ray at this time showed an enlarged heart with a suggestive thymic shadow. It was given a roentgen treatment for an enlarged thymus. The cyanotic attacks continued for about two hours more, when the patient died. It ran practically no temperature while under observation.

*Autopsy Report.*—Fairly well nourished child of one month with purulent nasal discharge. On opening the chest cavity the thymus was seen. It appeared large but did not extend over the heart to any extent and weighed 13 grams. The heart was large, dilated, full of blood and showed no gross anomalies. Both lungs showed a great deal of congestion posteriorly but practically no pneumonia grossly or on section. The abdominal findings were negative; the Malpighian corpuscles of the spleen were prominent. There was no enlargement of the lymphatic glands of the chest or abdomen.

Figure 8. Kidney from Case 2. Petechial hemorrhages over the surface.

*Summary.*—A study of the preceding cases emphasizes the following points:

1. These were all infants, the ages varying from one to nine months. They were apparently all normal babies previous to this illness. None had had any earlier illness. They all died with their first infection.

2. They all showed evidence of infection of comparative mildness, in every case an upper respiratory affair described as a "cold." These infections were not accompanied by any considerable amount of fever; in those cases where it was taken it never reached 101 degrees F. The illnesses were of short duration, three children having been sick only three days, while the others had had a cold for one to two weeks before with none other than the local symptoms.

3. Evidences of thymic pathology were found in all. Cases 3, 4 and 5 all showed stridor, while the last two named showed in addition a dyspnea which was, however, likely cardiac in origin. There was a definite roentgenologic shadow such as is generally considered to be due to an enlarged thymus in the only two cases to be roentgen rayed. In one case a thymic area of dullness was obtained on percussion. The post-mortem examination in all cases showed the thymus to weigh 13 grams or more, the largest weighing 27 grams. There were hemorrhages into the gland in four of the five cases.

4. Lymphoid hyperplasia found elsewhere in the body added to the picture materially. This was present in Cases 1, 2, 3 and 4, and was most evident in the mesenteric glands and the solitary follicles of the intestines.

5. Sudden death was conspicuous in Cases 1, 2 and 3. This occurred practically without warning.

6. Evidence of a systemic disease was not lacking as is shown by hemorrhages elsewhere, notably in the lungs in Case 1; in the visceral and parietal pleura, visceral pericardium, stomach, intestines, kidneys, liver, spleen, brain and beneath the cranial periosteum, in Case 2. Cases No. 2 and 4 showed clear fluid in the pleural and abdominal cavities; unfortunately this was not cultured.

7. Two cases, numbers 4 and 5, showed large hearts with symptoms of cardiac dilatation in addition. On examination these hearts showed no evidence of congenital or acquired defect, and therefore might be considered to be part of the same general disease. Case 5 is certainly not as clear cut as the preceding Case No. 4; however, I believe it to belong in the same category because of the great similarity it bears.

In conclusion: I have thought it worth while to report the above cases because of the numerous interesting points which they bring to light, the variability in symptoms, physical and post-mortem findings. To my mind there was in each instance an associated infection which likely had a great deal to do with the fatal outcomes of all, having necessarily the thymico-lymphatic state as background. There is also a possibility that an acute hyperplasia of the lymphoid elements throughout the body may occur in response to infection and produce the picture of a status thymico-lymphaticus. The cardiac dilatation with symptoms of decompensation noted in Cases 4 and 5 is a point well remembered.

I wish to thank Mr. H. A. Tuttle for his painstaking work in preparing the pictures and slides for this work.

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## DISCUSSION

DR. F. W. SCHLUTZ, Minneapolis: Few of us have seen so many cases of this type of condition in so short a period as has Dr. Kohlbry. While it is apparently a condition which is quite rare, it is, nevertheless, true that this type of child is not rare. We quite commonly see them in our office and can often determine that the condition is present. There is not alone an enlargement of the thymus, but a general lymphatic enlargement. To see a series of five deaths in a short period is really a rare experience. The feature that makes the occasional outcome of this condition so tragic is due to the fact that these children are usually considered prize children. The suddenness with which they pass out, seemingly without any reasonable cause, is absolutely startling.

I was fortunate upon two separate occasions to witness this kind of a death. It happened in one of the hospitals abroad. The nurse had just fed these infants. One was about eight months old and the other about seven months. They were unusually fine specimens. Everybody made a great deal of them because they were so attractive and looked so fine. In both instances they had just been fed. It was not two minutes after and just as the nurse had turned away, that one of the children was dead, and the other one died in a very similar manner. Both cases came to autopsy, as it was suspected that death was due to an enlarged thymus. The thymus in one case weighed ten grams and the other twelve grams. These weights are a little less than was expected from a case of thymus enlargement according to the view of continental writers.

Sometimes a very insignificant affection will bring about sudden death of these cases. It is a common observation that the death frequently occurs immediately after feeding. It sometimes occurs after the use of vaccine or serum. Where this condition is suspected it is well to warn the parents of the possible consequences should the child develop diphtheria and should the use of antitoxin become necessary. It is my practice to give the maximum dose at one time so that repeated injections can be avoided.

Dr. Kohlbry mentioned the theory of Symmers, that the condition can be explained on the ground of anaphylactic shock. He has developed this theory in a very interesting manner, and it strikes me as a very good explanation of what is possibly found in this condition.

Many cases of status lymphaticus have spasmophilia as an associated condition. We know that it is dangerous to examine the throat or to depress the tongue in cases of spasmophilia. I had an experience of this type once. The mother brought the child in for laryngospasms and breath holding. I foolishly depressed the child's tongue in order to examine the throat. It immediately went into a pronounced spasm, from which it did not recover for what seemed an interminable time. I at first pacified the parents and told them that the child would come out all right, but soon became alarmed myself and used every means of resuscitation. When the child finally came to, the parents snatched the child and rushed from the room without saying a word and I have never seen them since.

If the suspected status lymphaticus case has marked electrical reactions and other spasmophilic symptoms it is probably well to avoid throat examinations or any other therapeutic procedure, such as the injection of serum, etc., as much as possible.

I have been impressed with heliotherapy as a therapeutic measure in these conditions. All other forms of light therapy should be equally beneficial.

The feeding is also a very important factor. I believe it unwise to give large amounts of cow's milk. Czerny has definitely shown what a pronounced effect dietetic procedure can have on these conditions. It is probably the most important factor in the whole treatment.

DR. ROOD TAYLOR, Minneapolis: There is no organ concerning which there is more opportunity for speculation than the thymus gland. There are many points concerning its function which we do not understand at all. The old idea of the child that died suddenly because of the enlarged thymus, because the size of the thymus had obstructed breathing, has a good deal to recommend it and a good deal against it. The thymus is soft enough so that it bears the impress of all the neighboring structures. Not all children who die suddenly die of enlarged thymus. Dr. Bell, Minnesota Professor of Pathology, told me of a little child who suddenly cried out and fell down stairs. The parents ran up and found the child dead. The pathologist

decided that the child died of an enlarged thymus. The next day a child of seven or eight gave the same cry and fell down stairs. They finally got in an electrician and when he reached a particular place on the stairway he found that a loose wire had come down through the roof and the child going up on its hands and knees got a shock and died. We have had several patients that died suddenly who did not have an enlarged thymus but some other condition to account for the sudden death.

Dr. S. Amberg, Rochester: The sudden death due to the enlarged thymus has naturally caused a great deal of discussion. I think it would be well not only to take into consideration the sudden death when there is a large thymus, but also those occurring in other conditions, as for instance, in cases of eczemas without an enlarged thymus. It might be well to look for causes of sudden death more connectedly instead of emphasizing the particular disease in which it happens.

Dr. Carl O. Kohlbry, Duluth (closing): Just a few words regarding convulsions associated with thymus disease. I think that status lymphaticus has likely been overworked as a cause for sudden convulsive deaths. It is not our place to put convulsive diseases of all sorts in the thymic category. Considerable work concerning the prevalence of status lymphaticus in convulsive diseases has been done by Ohlmacher of Ohio in a hospital for epileptics. He finds that enlarged thymi are associated with epilepsy more frequently than they are to be found in the general run of cases and that sudden deaths are frequently associated with this condition. I personally do not think that every thymic shadow shown up by roentgen ray necessarily means that the child will be subject to symptoms of enlarged thymus. Several recent papers have markedly demonstrated this. I have roentgen ray pictures of three or four cases with enlarged thymic shadows giving no definite symptoms. I have, however, given each one of these one or more *x*-ray treatments as a safeguard. The literature also mentions its association with eczema as noted by Dr. Amberg. I feel, however, as he does, that we should not diagnose every case of sudden death in eczema as status lymphaticus without very definite anatomical findings.

## A STUDY OF THE TONSIL QUESTION WITH A PRELIMINARY REPORT OF ROENTGEN RAY AND RADIUM THERAPY IN THE TREATMENT OF PATHOLOGIC TONSILS*

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The tonsil question is still one of the most discussed in medicine. The object of this paper is to give a concise statement of the facts, to make a plea for more careful study of each case before deciding on the form of treatment indicated and to give a preliminary report on the newer methods of therapy with roentgen ray and radium.

Too little attention has been paid to the after results of tonsillectomy and too many operations are done without securing permanent results. The value or disadvantage of tonsillectomy and adenoidectomy can only be ascertained by the study of large groups over a period of several years. Too little follow-up work after operation has been done in the past.

*Function of the Tonsil.*—It is remarkable so little attention has been paid, to the function of an organ so easily inspected and so often diseased. Its embryological development should lead us to believe that it has as definite a function as the thyroid, parathyroid or thymus. Barnes says, "That the tonsils are atavistic in nature and therefore without function, there is not the slightest reason to believe."

Digby in his recent monograph, *Immunity in Health*, shows the tonsil is largely a subepithelial tissue similar to the Peyer's patch of the intestine and not a lymphatic gland, as so often taught. This tissue is composed of lymph follicles which contain leucocytes in large numbers. These are constantly engulfing bacteria where bacterial activities are greatest.

Mackenzie, Wilson, Schäfer, Stöhr, Adami, Fox, Barnes, and others all agree that lymphocytes, phagocytic in character, are found in the tonsils. Large numbers of these pass into the blood while others wander through the epithelium into the crypts and become a part of the cheesy masses often found in the crypts.

May not a further proof of some function be noted in the many attempts of Nature to fill the fossa again after careful enucleation? Also, that Kaiser found 22 per cent of 5,000 children without previous glandular enlargement prior to operation showing glandular enlargement within one year after operation.

It has been noted by many observers that absence of the tonsils does not protect from serious throat involvement in epidemic sore throat outbreaks. Zahorsky has frequently observed that the child beginning school life without its tonsils is in greater danger of contagious disease than one who has his tonsils. Kaiser says it is doubtful whether tonsillectomy lessens the incidence to contagious disease.

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*Résumé of Large Group Studies.*—The Johns Hopkins Hospital Report is based on 1,000 cases. The patients were examined before operation and from one to four years after operation. The report is most complete and shows the following facts:

1. Fifty-eight per cent showed mouth breathing after operation.

2. Fifty-five per cent showed evidences of tissue left after operation.

3. Forty per cent of operated patients are just as liable to sore throat after operation as before, the angina often being more diffuse.

4. Tonsillectomy is rarely of benefit in deforming arthritis, never in acute chorea, rarely in acute rheumatic fever, endocarditis, and chronic kidney lesion.

5. Only 25 per cent of the children of Baltimore have definite indication for the removal of the adenoids.

Stewart shows the following immediate results in 10,756 tonsillectomies:

| | |
|---|---|
| Deaths | 15 |
| Primary hemorrhage | 432 |
| Secondary hemorrhage | 79 |
| Hemophiliacs | 26 |
| Bronchiectasis | 3 |
| Pulmonary abscess | 1 |
| Sepsis | 9 |
| Ear infection after operation, many replies frequent | 35 |
| Shock, many replies frequent | 19 |

Frequent reports of lung abscess and pneumonia following tonsillectomy appear in the literature. Heuer recently collected some 200 cases in the past ten years. Many more occur which are never reported.

Kaiser studied 1,200 children as to the effects of tonsillectomy on underweight and malnutrition. He found 66 per cent normal or overweight before operation. Of the 34 per cent underweight and malnourished 15.9 per cent were still underweight nine to twelve months after operation, 7 per cent of the total number were relatively in poorer nutrition at the time of re-examination than at the time of operation. He concluded that diseased tonsils and adenoids do not necessarily impair nutrition.

MacWhinnie likewise has shown that it was a common complaint that the patient did not gain in weight following tonsillectomy and showed the gain was more rapid with the method of fulguration treatment. He was able to show a gain of from five to twelve pounds.

J. C. Beck, who has had large experience, states tonsils are the focus of infection in 20 per cent of chronic infections due to focal disease. Davis, after examination of 7,500 school children yearly for three years, states cervical glands enlarge as often after operation as before removal. Davis noted the tendency to mouth breathing after skilled and careful operation, and concludes that the original cause of the growths, whatever it may be, is present and active until a much later period. Some writers give as high as 41 per cent of enlarged glands after operation.

*Bacteriology of the Tonsil.*—Kellert studied a large number of tonsils removed from healthy young adults. He found no bacteria in the lymphoid tissue of the tonsils and concluded that the importance of tonsils and teeth as portals of entry of hematogenous infection are exaggerated. He believes the streptococcus is a saphrophyte. This agrees with the Blanton, Burnham and Hunter investigations.

Keilty studied 388 cases and shows that the tonsils may be considered inactive foci of infection. He was unable to offer any proof that organisms present are poured into the circulation.

Pilot and Davis found streptococcus hemolyticus in 97 per cent of tonsils examined by them and Tongs in 80 per cent of a small group of children. They also demonstrated operation does not entirely do away with these bacteria.

Gottlieb found only one in twenty-four cases of streptococci virulent. No one questions the damaging effects of streptococci but the latest studies seem to show that the tonsil is a natural habitat of this organism and unless the mucous membrane is broken or the resistance lowered it does not enter the circulation or cause lesions.

*End Results of Tonsillectomy.*—What we want are the end results. These are of the most importance to the patient and physician.

Blauner and Orgel in a very recent report of the end results in 100 tonsillectomies and adenectomies in children one year after operation found as follows:

1. Fifty-one per cent were unimproved from frequent colds.

2. Fifty per cent showed no improvement in mouth breathing.

3. One hundred per cent no improvement from asthma.

4. Seventy-five per cent no improvement in cardiac lesions.

5. Thirteen per cent of the total were made worse by operation.

6. Eighty-three per cent showed improvement from tonsillitis, particularly that associated with rheumatic manifestations.

7. Sixty-six per cent of a small group of otitis media cases were benefited.

8. Fifty-seven per cent showed no improvement where the operation was done upon the advice of nurse or teacher.

The latter point is of importance, as so many nurses and teachers urge parents to have children operated on or be excluded from school. A survey made by the writer this summer of 108 patients, two years or more after operation (ninety-four of the number were children) shows a similar condition. More mouth breathing was encountered, also the number of ear complications without improvement after operation was larger than in the above report.

All these results taken from observations of over 30,000 patients should cause us to pause and ask ourselves whether we are giving the best advice in recommending operation to every patient with tonsil or adenoid disease. The laryngological section of the Royal Society of Medicine recently recommended fewer operations and more attention to proper feeding and the condition of the intestinal tract in the prevention of nasal and throat troubles. The writer is becoming more convinced of the tremendous importance of the latter fact in the production of nasal and throat irritation, also of the tubercular diathesis as a cause of tonsil hypertrophy.

*Causes of Tonsil and Adenoid Hypertrophy.*—Conservative science demands that we pay more attention to the causes of tonsil and adenoid disease. Diseased tonsils and adenoids are more often the result of some systemic disturbance, long continued hygienic errors, faulty metabolism and endocrine imbalance than the actual cause of disease. The more important causes of tonsil and adenoid hyperplasia are:

1. Oral sepsis—greater attention must be paid to mouth hygiene.

2. Nasal sinus disease, often overlooked, may be the cause of repeated sore throats.

3. Diet, especially in childhood, is an exceedingly important factor. Errors of diet have given the exact clinical picture seen in some cases of enlarged tonsils and adenoids. The enormous consumption of sweets, the almost universal use of patent flours and cereals with their lack of calcium, also the lack of vegetables and fruits so prevalent in the diet of children are among the most important factors in the causation of naso-pharyngeal pathology of childhood.

4. Syphilis must never be overlooked and in a considerable number either an inherited or primary infection exists.

5. Lack of fresh air and sunshine together with an inherited tendency to lymphoid hyperplasia as seen in some families may be a causal factor.

6. Insufficient thyroid functioning due to frequent infections as well as an imbalance of other ductless glands appears to be associated with a fair number of tonsil hypertrophies.

*Methods of Treatment.*—Treatment must look to the removal of the cause of the tonsil disease. Cleaning up a badly infected mouth is absolutely necessary before instituting any form of treatment.

During the past five years considerable work has been done with the desiccation or fulguration method of Clark. This method is especially good in tuberculosis. The report of the North Carolina Sanitarium is most encouraging.

*Indications for Operation.*—Patients with the following tonsil conditions should be operated, unless presenting serious heart, pulmonary or grave physical condition contraindicating operation:

1. History of repeated attacks of tonsillitis and peritonsillar abscess.

2. Small, firm, sclerosed, submerged tonsils with frequent sore throats.

3. Badly diseased and abscessed tonsils causing acute polyarthritis, acute kidney, certain eye lesions or other definite evidences of focal infection.

4. Cases of rapidly increasing deafness and ear infection due clearly to diseased tonsils and adenoids.

*Roentgen Ray and Radium Therapy.*—For more than fifteen years it has been known that the roentgen ray has a very definite destroying action on lymph tissue. Animal experimentation has conclusively shown with proper exposure it is possible to practically remove all lymph tissue without producing any changes in other organs or tissues.

The tonsils, as previously stated, are largely composed of lymph follicles. This fact led Witherbee, then with the Rockefeller Institute, to try the effect of the roentgen ray on hypertrophied tonsils and infected lymph tissue of the naso-pharynx. Since reporting his first series of cases he has treated more than 500 patients with excellent results, and no unfavorable symptoms. The results have been most gratifying in chorea, rheumatism, and cardiac cases, types which have not so easily been helped by tonsillectomy. Hermann and others who have had considerable experience with this method have likewise been able to verify Witherbee's results especially in the cardiac, chorea, and malnourished patients.

Hickey of Detroit tried this method with diphtheria carriers and had 80 per cent of cures, many of the patients becoming free of the bacilli with one treatment and within four days of its application. Kahn of Toledo in a private communication states he has treated 200 carriers for the Toledo Board of Health, 152 of whom could be traced and recultured at least ninety days after treatment. Seventy per cent of the 152 showed a cure, and 72 per cent of the total number became free of the bacilli with one treatment. Only one patient required as many as four treatments. All the cases showing relapse were negative for virulency.

The question arises, will the method be permanent? That it will be so in a large number of the cases if sufficiently carried out is very clearly shown by the work of Price, who selected forty-eight cases of cervical adenitis, tuberculous or otherwise. Some of the patients had been treated and observed as many as twelve years. Twenty-nine, or 62 per cent, showed normal throats and gave no history of any throat trouble since the treatment of the glands, whereas they had nearly all had trouble previously. Eight, or 16 per cent, showed slight tonsil disease but no symptoms, making a total of 78 per cent symptomless, while the remaining eleven, or 22 per cent, showed definite tonsil or adenoid disease. Remember results were obtained with treatment directed to the adenitis only.

Lafferty and Phillips examined a series four to six years after treatment and found the patients remarkably free from throat pathology. Van Allen was able to show 80 per cent of fifty patients without further attacks of sore throat and the tonsils ceased to be a menace. These cases were followed for three years. Likewise we could quote many others. This surely is fully equal to any results obtained with operative means.

Simpson, Wells, Williams, Osgood and others report excellent and striking results with radium in tonsil therapy. While the writer's results with radium are too early in most cases to decide definitely, the results so far look better than with the *x*-ray alone. The shortness of time required for treatment and the ease of application make this method an advantageous one. There is no hemorrhage, no loss of time and not the slightest discomfort afterward. That the roentgen ray and radium are harmless if properly applied is shown by the reports of a large number of tuberculous gland cases treated throughout the world. Review of the literature does not reveal a single untoward effect of the roentgen ray on the thyroid, parathyroid, pituitary, parotid or other adjacent tissue with this form of therapy.

## REPORT OF CASES

During the year ending September 30, 1922, the writer has had under treatment and followed up fifty-two patients treated with roentgen ray and twenty-four treated with radium or both combined. We have made bacteriological studies of many of these patients and have found a decided lessening of the number of bacteria; in several cases the streptococci have been entirely absent as long as ten months after treatment. We make no claims that it will do away entirely with the bacteria, but are convinced the mechanical drainage established through the shrinkage and narrowing of the crypts is beneficial in reducing the bacterial flora of the tonsils and naso-pharyngeal tissues.

One patient treated in the second month of pregnancy who had troublesome sore throats and arthritis has remained free from sore throat and arthritis for nearly a year and has a fine healthy babe. In our series there were four cases with notable thyroid enlargement. In all improvement in the size of the thyroid has been noted.

Seven cases we were unable to follow and obtain

re-examination, but three replied saying they were some better and free from sore throat. One patient had a tonsillectomy; she took but three treatments and stopped against our advice. The remaining three were lost track of. One other patient has had a tonsillectomy by the writer a few weeks ago. This patient, E. L., a young woman, aged 20, had very large tonsils with deep crypts. She received four treatments; the size not being much reduced she consulted a general practitioner who advised removal of the tonsils. She did not have this done, however, until about eight months after the treatments. At the time of operation the tonsils showed no signs of inflammation, the pillars and tonsils were of a healthy pink color and the tonsils just outside the pillars. The only subjective symptoms present since the treatments had been a sudden enlargement of the thyroid about two weeks before she sought operation. This she connected with the tonsils as several times in years past she had had this swelling following sore throats.

Dr. F. Grave sectioned the tonsils and reports as follows: There is diminution in the size of the tonsils. Sections show atrophy of the lymphoid follicles and an increase of fibrous tissue particularly surrounding the follicles and crypts. Cultures from the crypts are negative. This patient had just a year before shown streptococci and a gram negative micrococcus. The tonsils were so firm and adherent that considerable difficulty was experienced in enucleating them.

Of the remaining fifteen patients not shown in the table below all are doing well except one. These patients have been under observation four months or less and are too early to report. Only three showed a mild skin reaction and this quickly disappeared. Several complained of swelling of the glands for twenty-four hours and one or two of dryness of the mouth, but these were only temporary symptoms. The ages of patients have been from three and a half to seventy-two years, a little less than half being under sixteen.

Three patients still have very red throats, but it is a diffuse, bright redness and the same type of throat was encountered several times in the tonsil survey recently made by the writer. As to the cause, we are unable to offer any explanation. All the patients were symptomless and said they had had this color for some time.

RESULTS EIGHT MONTHS TO ONE YEAR AFTER TREATMENT

| | No. Cases | Improved | Not Improved |
|---|---|---|---|
| Hypertrophied tonsils | 20 | 18 | 2 |
| Small fibrous tonsils | 4 | 2 | 2 |
| Mouth breathing, adenoids | 15 | 15 | |
| Cervical adenitis | 17 | 17 | |
| Otitis media suppurative | 4 | 4 | |
| Otitis media non-suppurative | 3 | 3 | |
| Cardiac lesions | 1 | 1 | |
| Gain in weight | 22 | | 2 |

In addition to the above, four patients who have had previous tonsillectomies with symptoms still persisting after operation have had this form of therapy. All had large follicles and tags of tissue and showed glandular enlargement; three had arthritis, and one asthma; all had repeated attacks of sore throat and colds.

The patient with asthma has been entirely free from all symptoms for six months; one of the arthritis cases has improved and as to the other two, it is too early to give a definite opinion. All have shown decided shrinkage of the follicles.

All the patients with cervical adenitis have shown reduction in the size of the glands and the majority have become entirely impalpable. The most striking results have been with children and adults of a decided lymphoid hyperplasia type.

A great deal of attention has been paid to the appearance of the throat after each treatment before deciding on further treatment or the time of the next application. Likewise special attention has been paid to ascertaining the primary cause of the tonsil hypertrophy and steps taken to remove it. We have paid special attention to the teeth, the diet, and the breaking up of the habit of mouth breathing.

## CONCLUSIONS

1. Study of more than 30,000 patients from various sources one to four years after operation shows permanent results in only about one-half of the total number.

2. The tonsil has some function and greater care should be taken to preserve this, especially in childhood.

3. Greater care is necessary in studying patients with tonsil disease and in selecting cases for operation.

4. Roentgen ray and radium offer a safe method of treatment in carefully selected cases.

5. Results have been most striking in children and adults of a decided lymphoid hyperplasia type,

also in patients with cervical adenitis associated with tonsil pathology.

6. Longer study is needed to prove the permanent disappearance of all symptoms accompanying tonsil and adenoid disease, and some further investigation on the types of tonsils best suited to this form of therapy.

In conclusion, I wish to thank Dr. F. S. Bissell and Dr. Floyd Grave, who have given so generously of their time to the roentgen ray and laboratory part of this study.

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## DISCUSSION

F. S. Bissell, Minneapolis: Dr. Lane has asked me to discuss the treatment by radiation of diseased or hypertrophied tonsils and the impression gained through our observations of a series of cases. I shall devote little time to a review of the literature, since that has already been done by the essayist, but shall confine my remarks largely to personal observations.

In considering this subject it must be borne in mind that while radiation therapy has been applied directly to tonsils but a relatively short time the marked susceptibility of lymphoid structures to the effects of radiation has been well understood. It has been observed in the leukemias and the enlarged thymus of infancy. It has also been noted that lymphocytes disappear from the blood stream under mild radiation. Under these circumstances is it not remarkable that infected lymphoid masses have not been from the first an obvious point of attack by radiation?

Murphy, Witherbee, Craig, Hussey and Sturm, of the Rockefeller Institute, made a joint study of a series of cases proving that by exposure to the *x*-ray they could not only diminish the size of the hypertrophied tonsils but that with the atrophy there was a disappearance or lessening of the exudate and a diminution of the bacterial flora which were pathological in character. In a few of their cases there was little, if any, reduction in size and in four cases it was still possible after treatment to express abnormal exudate from crypts. In our series there was one case which failed to respond to *x*-ray treatment but which became normal under radium. This can probably be explained by the more direct and accurate application of the beta rays to the tonsillar tissue. In a few cases there was a primary swelling of the tonsils and lymphoid masses within the throat followed in a few hours by pronounced shrinking as crypts opened up and free drainage became established. In most of our favorable cases, however, there was no immediate marked reaction to be observed, but after a week or ten days the tonsils appeared smaller and the entire throat began to assume a healthier appearance.

In some instances there was no noticeable change in the size of the tonsil for three or four weeks, after which the reduction in size became markedly progressive. All of our cases had definitely enlarged tonsils. Some have shown an appreciable atrophy but a number have remained persistently larger than normal. Even in these less favorable cases, however, the mucous membrane of the throat loses its dark red angry appearance and assumes a healthy pinkish hue.

It may serve our purpose best to briefly review a few case histories with a description of the throat and general condition before and after treatment. Most of the clinical notes were made by Dr. Lane and copied from her case records.

Carl F., aged 8, was first treated on January 18, 1922. He had a discharging ear which had persisted for some weeks. Fair nasal space. The left tonsil was large and dark red, with a deep depression in the center. There was some cheesy material in the crypts, while the pillars were red and inflamed. Surfaces were ragged in appearance. The right tonsil was a little smaller, ragged and covered with exudate. Cervical glands enlarged on both sides. He had had several attacks of tonsillitis. Culture from the crypts showed a long chain streptococcus. Following the first treatment there was some swelling and sore throat which persisted twenty-four hours. One week later the tonsils appeared non-inflamed, cleaner, and with much less redness of the pillars. Both tonsils were smaller. On March 29th the cervical glands were not palpable and the right tonsil at the pillar line was not red. The left one was still enlarged and slightly red. July 1st there was a slight ear discharge, no colds for five months. Tonsils smaller. September 15, 1922, no cervical glands, tonsils just outside pillar line. Cultures negative. Weight 49.5 pounds. General color and appearance excellent. No further ear discharge.

Verne D., aged 13, was first treated January 3, 1922. He had an enlarged thyroid. The right tonsil was large, ragged and full of cheesy material and the lower part was a dark livid red. Left tonsil slightly smaller, very red, with cheesy mass in center and several large crypts. There was a large vessel extending from the superior pole downward towards the center. Both pillars were inflamed and there were three adenoid-like follicles in the pharynx. Culture by Dr. Grave gave nearly pure Gram-negative diplococci with a few Gram-positive diplococci. Negative for streptococci. After four treatments the neck was 1.25 inches smaller in size and there were no follicles noted on the pharynx. The large vessel on the left tonsil had disappeared. The tonsils were within the pillar line and not red.

Roy D., aged 15. Right tonsil was very large, ragged and red, and contained deep crypts. Right anterior pillar presented a red inflamed area and some pus was expressed from the crypts. Very large sublingual glands. Culture by Dr. Grave gave a Gram-positive diplococcus predominating. Four treatments in January, 1922. On February 8, 1922, both tonsils were well within the pillar line and there was no inflammation in the pillars. Tonsils no longer ragged and the color good. No culture obtained.

Irving D., aged 9. Patient complains of continuous sore throat and earache. The tonsils are large, the left one touching the uvula. Tonsils not red or inflammed but of the soft mushy type. Several deep crypts but no pus expressed on pressure. A few adenoids and slight enlargement of the cervical gland. Good nasal space. Treatment

began December 18, 1921. On February 6, 1922, Dr. Lane reports headache improved, no cervical enlargement, right tonsil just outside the pillar line. Left tonsil little less than half distance to uvula. Ten mm. radium needle was then inserted into each tonsil and allowed to remain two hours. On September 9th tonsils are both within the pillar line, all symptoms have disappeared, and patient has gained in weight. Dr. Grave reports cultures negative.

Victor B., aged 8. Tonsils very large approaching uvula. Not inflamed. Deep crypts but no pus. Cervical glands slightly enlarged. Culture by Dr. Grave shows short chain streptococci. February 21, 1922, has had four treatments. Mother reports that child feels and acts better. Tonsils much smaller. Cervical adenitis improved.

Edith S., aged 5. Weight 30⅛ pounds. Earache on the left side with history of previous discharge. Tonsils are large and ragged, some adenoids, cervical glands large. She was given two treatments on July 28th and August 8th. On September 30, 1922, the report is as follows: Gain in weight, three pounds. Anemia improved, tonsil just outside pillar line, smooth and of good color. Father reports improvement in every way. Weight, 34 pounds.

Bessie B., aged 8. Has had torticollis on left side for about two weeks. The left tonsil is considerably larger than the right; both outside the pillar line; inflamed, very red, with deep crypts; the cervical glands are enlarged. After first treatment there was a marked swelling of all the glands, which, however, disappeared in about twenty-four hours. However, for this reason, patient did not return for further treatment. Mother reported that the torticollis disappeared and the child showed marked improvement.

One other case is perhaps worthy of report because it is of longer standing than any of these here reported:

Madaline A. was referred to me on August 9, 1918, for chronic cervical adenitis. The tonsils were large but no special consideration was given to that fact at the time. Following the first treatment there was very marked enlargement of the glands and the tonsils became so swollen as to interfere temporarily with deglutition. The following day there was marked improvement and within three days the glands of the neck had practically disappeared. She was given an additional treatment a month later but at this time the tonsils were retracted behind the pillars and there were no glands to be palpated in the neck. Since that time she has had no symptoms and the throat has remained in a healthy condition.

The writer's impressions based upon the observation of this series of cases may be summarized as follows:

Radiation has much to offer in the treatment of selected cases. The type which responds best is that characterized by large tonsils with deep crypts filled with exudate and with marked overgrowth of lymphoid follicles in the throat. The subacute cases, complicated by cervical adenitis usually respond promptly to radiation.

Radium has a certain advantage over the *x*-rays in the greater accuracy with which measured doses of beta rays may be applied directly to the tissue of the throat.

End results probably cannot be determined until a year or more has elapsed after treatment. Doubtless the retrogression of lymphoid tissue hypertrophy will continue for several months after treatment is suspended.

# ESSENTIALS IN THE TREATMENT OF PERITONITIS*

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In any consideration of peritonitis perhaps the most important single item is the question of drainage. It has been stated by competent authorities that complete drainage of the peritoneal cavity is impossible. The author is not prepared to dispute this view, but is firmly convinced that satisfactory results may be obtained in practically all cases if certain anatomical features of the region are kept in mind. To review the salient features, it will be recalled that the various mesenteries form membranous dividing walls which separate the abdominal cavity into several quite definite regions. Small contaminations of any of these divisions may become walled off and absorbed without special attention, but massive infections require drainage.

The stomach has no posterior mesentery, but is supported by the two omentums (Fig. II). The mesentery of the small intestine begins in the upper left abdomen at the point of emergence of the duodenum from its retroperitoneal position and travels obliquely downward to a point opposite the right sacro-iliac joint (Fig. I). It continues upward as the mesocolon, turns left at the hepatic flexure and fuses over the surface of the colon with the great omentum (Fig. II). It turns downward at the splenic flexure, which direction it maintains through the sigmoid to the rectum (Fig. I). At the flexures (Fig. I, A, B, C), the mesentery either becomes very short or totally disappears, leaving the colon a partly or entirely retroperitoneal organ. The areas which result from division of the peritoneal cavity by the mesenteries form natural paths for the extension of inflammation and the mesenteries themselves are both guides and barriers.

A large majority of cases of peritonitis are of appendiceal origin. Due to the dependent and sometimes retrocecal position of the appendix the inflammation, if an abscess is not formed, is usually confined to the lower abdomen. This includes:

*Presented before the Annual Meeting of the Minnesota State Medical Association, Minneapolis, October, 1922.

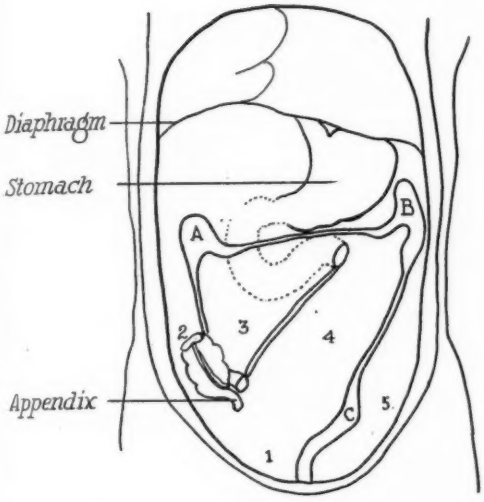


Fig. I. Semidiagrammatic view of posterior mesenteric attachments, liver, greater and lesser omentums omitted. (After Piersol.)

(1) the immediate vicinity of the cecum; (2) the pelvis (Fig. I, 1); (3) the right kidney fossæ (Fig. I, 2); and (4) the space between the descending mesocolon and the mesentery of the small bowel (Fig. I, 4). The middle peritoneal fossa (Fig. I, 3), particularly if covered by omentum, escapes in all but the most severe cases and with it the region to the left of the descending colon (Fig. I, 5). If infected they must be drained. If not, drainage must be supplied to: (1) the pelvis; (2) appendix and right kidney fossa; and (3) the intermesenteric region — this last, if preferred, through a stab drain in the left flank. These three are sufficient in all but a very small percentage of cases of appendiceal peritonitis. Stab wounds, gunshot wounds and the perforation of typhoid ulcers may flood the entire region including the middle peritoneal fossa and left kidney fossa and perhaps infect the upper abdomen. They should be drained accordingly.

The upper abdomen presents a slightly different problem largely because of the stomach and its attached omenta. Perforation of posterior duodenal ulcers may infect the retroperitoneal tissue and will not be considered in this paper. Posterior gastric ulcers which perforate, usually infect only the lesser peritoneal cavity, which is best drained through the great omentum (Fig. II). Anterior gastric and duodenal ulcers, if chronic, usually cause only a localized abscess on perforation; if acute, they may give rise to widespread infection. Acute peritonitis from an empty stomach will be confined to a peripheral location until the borders of the great omentum are passed and at times they are not. In perforation of a full stomach these limits will almost certainly be exceeded and the whole abdomen except the lesser sac flooded.

Peritonitis arising from the pelvic organs of the female, if of a mild nature such as the gonococcus frequently causes, may be drained per vaginam when drainage is necessary. The more severe types, such as occur in strepococcus infection, may respond to no form of treatment nor type of drainage and the mortality is high. Such is the course of streptococcus peritonitis in general. Pneumococcus infection of the peritoneum frequently comes with the septicemia of early pneumonia, but rarely requires operation and is of secondary importance to the pulmonary condition.

Turning from the anatomical side, one is confronted by problems arising from the altered physiology involved and the still unanswered question of the nature of immunity.

Infection is, among other things, a quantitative affair and with bacterial virulence and tissue resistance the same a widespread inflammation will surely prove more severe than a limited one. Consequently, in peritoneal infection prompt localization is demanded and intestinal immobility is of prime importance to prevent extension. Anything

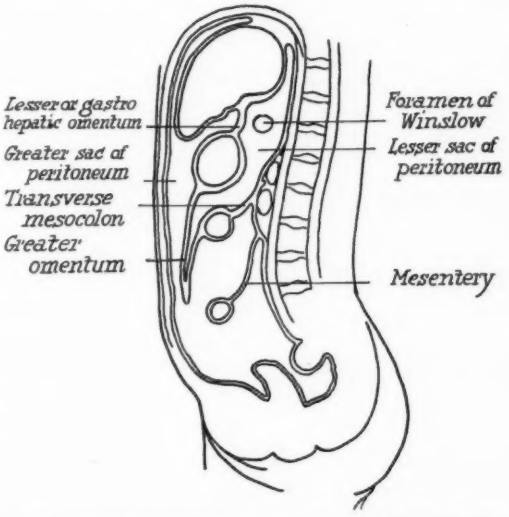


Fig. II. Sagittal section view of mesenteric attachments. Semidiagrammatic. (After Piersol.)

else threatens a fatal increase in the area of infection or at least the formation of pockets and residual abscesses with delayed recovery. Food is the great stimulus to peristalsis and if Ochsner's plan of starvation is followed during the few days when the issue is in doubt there is much less danger of tearing protective adhesions or of spreading the infecting organisms by movements of the gut. It should be further recognized that the administration of cathartics or pituitrin at this stage may overcome the best efforts to quiet the gut and they should be withheld until convalescence is well established. Enemas, on the contrary, if judiciously used, may be given without apparent ill effect after the first twenty-four hours. At the same time, morphine should be given at frequent intervals, not only for its value as an intestinal sedative, but also for the comfort and relief from pain which the patient derives.

A further measure of value in promoting comfort is found in abdominal applications, either hot or cold. Singularly enough, vascular dilatation follows either; at once in the case of heat and after a preliminary vaso-constriction in the case of cold. This vascular dilatation furnishes an increased blood supply, more antibodies and helps to localize the infection. The analgesic properties of both heat and cold are too well known to require further discussion.

The position occupied by the patient is of some moment and should have a few words devoted to it. Custom dictates the semi-erect Fowler's position, which facilitates gravitation of pus to the lower abdomen and minimizes the danger of extension of the inflammation to the less resistant upper abdominal peritoneum.

A further requirement of the patient with peritonitis and one of vital importance is a large supply of fresh water. Authorities[1, 2, 3] have long recognized the value of water, but have confined the reasons advanced to those of a very general nature. Recent experimental work has thrown some light on the nature of the pathologic process and with it the method of action of water. In 1919, Woodyatt[4] and his associates reported on the production of experimental fever following dehydration and discussed, from a theoretical standpoint, the bearing of their results on the question of bacterial fevers. It has since been shown that exhaustion of the available body-water results in increased protein metabolism; a protein fever following in the wake of dehydration[5, 6] and since elimination is impossible in the absence of a fluid vehicle the end products—the so-called non-protein blood nitrogen—may in a few hours reach a concentration not to be told from that of uremia—yet nephritis plays no part in the process.

There are, in many bacterial diseases, certain alterations in the way the tissues handle water which are worthy of note. In the common circumscribed, superficial infections there is always a surrounding zone of edema or water retention which extends much beyond the area of actual bacterial invasion. Typical croupous pneumonia shows the same phenomenon in a generalized form and may, in the acute stage, retain a number of liters of water which is rapidly released through the skin and kidneys when the crisis is reached. Careful measurement of fluid intake and output in cases of peritonitis which recover will show a similar but less abrupt loss and recovery of normal water balance. This retention apparently results from some change in the state of colloidal combination in which the water is held and gives visible evidence that the body has use for abnormally large quantities of fluid in these diseases. The change is seemingly equivalent to actual withdrawal of water from the body and there occur increased protein wastage, fever and leukocytosis[5, 6], all of which may be reproduced by experimental dehydration. Many pneumonia and peritonitis cases show, in addition, sharp increases of non-protein nitrogen[7, 8] in the blood. This, when present, indicates acute and urgent need of water. Added evidence of water shortage may be seen in the dry skin, scant urine and parched tongue.

Water must be granted a place in the scheme of immunity to infection insofar as it compensates for the change in fluid requirements and should be given to the patient with peritonitis in large amounts—never less than 4000 c.c. and at times 6000 c.c. or more daily. As to the route of administration, it is best given through the skin, either interstitially or intravenously, according to the preference of the surgeon. If, at times, a failing circulation is unable to absorb interstitial saline, the intravenous route becomes imperative. Water by mouth should not be given in the uncontrolled stage of the disease, as it may cause undesirable peristalsis and the uncertain absorption with occa-

sional vomiting render difficult a precise knowledge of the amount given. If the rectum is used, tap water which is hypotonic to the body fluids is probably more easily absorbed than the isotonic saline or the hypertonic solutions of glucose and soda which are given to combat an acidosis the importance of which probably looms larger in fancy than in fact. These last, one fermentable and the other readily evolving carbon dioxide, give the impression that, at times, they actually increase the suffering and distension of the patient. Even in the rectum the absorption of fluid is much less satisfactory than when it is introduced through the skin.

A majority of cases of peritonitis should do well on the treatment outlined. There remain that obstinate few where improvement does not come and where abdominal distension becomes progressively greater, all signs of intestinal activity, even the passage of flatus, vanish and the condition becomes indistinguishable from an intestinal obstruction. In such cases the intestines are found to contain much gas, the accumulated results of bacterial action, and in addition there may be large quantities of fluid which distort the gut, dragging it into the pelvis and giving rise to multiple obstructive angulations. The purely gaseous distension, while inconvenient and uncomfortable, is apparently less menacing to the patient than the mixed type and when distension and obstructive symptoms become really alarming there is almost invariably a large fluid content in the bowel. This fluid may arise from any or all of several sources: (1) it may be due to unabsorbed water taken by mouth; (2) it may represent the gastric, biliary and pancreatic secretions; (3) it may come from a source at present very imperfectly understood and of which the author's account is by no means complete. To resume, there exists in the mucosa of the small intestine a mechanism for the elimination of waste nitrogen concerning which our present-day knowledge is most painfully meagre. This function is normally inactive and only at times of stress, when there is an increase of nitrogenous waste to be excreted, does it come to the aid of the hard-pressed kidneys and pour water containing the waste into the gut. Thus in nephritis, where kidney efficiency is lowered and blood nitrogen accumulates, a watery diarrhea may offer relief. At such times catharsis seems to furnish stimulation. If the unwary practitioner administers drugs to check this, without proper investigation, the patient may lapse into uremia. Again, in conditions where water shortage results in increased waste formation and a vehicle for elimination is difficult to secure, the small quantity of available fluid may be passed into the gut and give rise to vomiting or merely remains in situ, adding to the distension and paralysis. In both intestinal obstruction and certain cases of peritonitis, which bear a resemblance, the fluid excreta in the bowel carries nitrogenous waste whose identity with that of the blood may be chemically demonstrated.

This function of the intestinal mucosa gives but short relief of the condition in the blood, as the water reserve is still further reduced in amount and the rate of protein cleavage and formation of end products undergoes rapid increase. Experimental data on the activities of the intestinal function of nitrogen elimination, while yet inadequate, are not entirely wanting and several observers[5, 9] have found nitrogenous waste deposited in the lumen of the bowel under conditions of increased concentration in the blood.

Cushny[10] states that normal human kidneys may continue to function against some twenty atmospheres of osmotic pressure in the urine secreted, with a urea concentration of sixty times that found in the blood. Up to this point renal secretion is adequate to eliminate waste and maintain equilibrium of the blood. As change of water balance becomes more marked, the concentration against which the kidneys must act rises and they soon prove incompetent. When this point is reached the gut mucosa may become functional and, for a period, attempt the elimination of watery refuse which distends and paralyzes the bowel. Alternate periods of inadequate and adequate hydration form a fertile source of such fluid accumulations. There is at first a period of rapid protein catabolism followed by increased waste formation and retention of the same. When a fresh supply of water becomes available elimination will commence and at first by the intestinal path. When the concentration is reduced to that point where renal function is possible, a resumption of the urinary output may be expected.

To forestall fluid distension, which is prima facie evidence that there is or has been a shortage of water, sufficient saline must be given not only to minimize protein metabolism but to provide a

diluent for keeping the concentration of the urine at a low point at all times. This permits the kidneys to easily handle the load. Furthermore, all efforts must be used to quickly wall off the infection so that extension and further increase of the water requirements shall not occur, as there are limits to the carrying and distributing powers of the circulation. Observation of a series of cases where maintenance of water balance is given a place of primary importance will convince the most skeptical of the value of what may be called "dilution" therapy in the prevention of fluid distension. These measures do not influence the accumulation of gas and some discomfort may arise from such a source. It is, however, not dangerous in itself and by the judicious use of enemas may be held in check until spontaneous passage commences.

In certain neglected cases, the picture of ileus is already present when the patient comes to operation and the preventative ounce cannot function as such. The curative pound is of questionable value and the outlook is correspondingly gloomy. Enemas may be tried, but are apt to prove futile. If the fluid regurgitates into the stomach it may be periodically withdrawn by a tube, to the great relief of the patient. This measure is at times invaluable and may serve in place of more radical procedures. If it fails, enterostomy is the sole recourse. At times, several openings may be required to drain the fluid and relieve angulations with restoration of functional continuity in the gut. Collins[11] very ingeniously drains both large and small bowels through a single tube. The watery exudate must be completely drained and not permitted to descend to the lower intestine for reabsorption, as it is highly toxic. In it are found the nitrogenous waste products from the blood stream which form a part and possibly all of the intestinal toxins of obstruction, although the presence of others cannot now be authoritatively denied and is still a matter of dispute.

## SUMMARY

The treatment of peritonitis should include:

1. Drainage in accordance with the focus and extent of infection and based on the anatomic configuration of the peritoneum.
2. Nothing by mouth.
3. Morphine at frequent intervals, but not to exceed the point where the respirations are reduced to fourteen per minute.
4. Large hot stupes or ice bags applied to the abdomen.
5. Fowler's position.
6. Hypodermoclysis or intravenous injection of 4000 c.c. of saline per twenty-four hours and more if the indications arise.

454 Lowry Building.

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## DISCUSSION

DR. A. R. COLVIN, St. Paul: Dr. Bacon has covered in a most exhaustive manner, not only the treatment of peritonitis but he has also given us a physiological and pathological basis upon which treatment should be founded. Upon this basis he has outlined treatment, the detail character of which emphasizes both its medical and surgical therapeutic aspects. In doing all this, he carries us into the region of physiological chemistry, which occupies so much of modern medical thought.

It is interesting in this connection to note how therapeutic measures at first founded upon clinical necessity are later rationalized, by, as it were, a more scientific explanation.

Peritonitis must be looked upon as acute sepsis plus the effect of acute inflammation of the underlying organs, which the peritoneum invests. We see patients with the most profound and widespread infections, not originating in the abdomen, recover in a longer or shorter time. In

peritonitis of a diffuse or general character the patient has to contend with the shock of great pain, the absorption of septic material from an absorbing surface almost as large as the skin, and paralysis of the intestine with the absorption of its consequent toxic contents.

Patients with acute sepsis from any source exhibit great thirst, and it is easily understood how, when the other factors of intestinal toxemia and the loss of water into the intestine are added, the thirst becomes intensified.

Dr. Bacon has given us a rationalized explanation for this thirst and its treatment. I have just said that profound sepsis may be recovered from and so may inflammation of the peritoneum.

We are all aware of the tremendous number of cases of localized peritonitis with encapsulated pus that recover. It was early a great wonder to me to see cases of most diffuse peritonitis, as demonstrated at the operating table, recover. It was later a great surprise to see some cases where all the symptoms and signs of general or, if you like, diffuse peritonitis were present, recover without operation. I have seen peritonitis of a diffuse character following gangrene of the intestinal wall with perforation due to Littre's hernia recovered from in the sense that all abdominal symptoms disappeared, the functions of the gastro-intestinal tract being restored, and yet the patient died of pyemia.

It is not so very uncommon for the surgeon to open multiple localized collections of pus, situated between coils of intestine or elsewhere in the abdominal cavity, quite remote from the main depot of infection and inflammation, and have their patients recover. These different observations but repeat the old observation of the infinite variety of reactions of the organism and its tissues, to the infinite variety and degrees of infection. With these observations in mind, it seems that our attitude should be one of optimism for the great majority of peritoneal infections.

By camping on the trail of these infections and keeping up a running combat we may easily save the day. Even in the most desperate cases, where intestinal paralysis seems to crush the last hope, enterostomy may help. It may not be amiss in speaking of treatment to include prophylaxis; perhaps it requires a really large experience to fully and truly realize the real significance of early operation, considered as a prophylactic measure.

The judgment as to how far to go and when to stop in the peritoneal cavity, means knowledge, judgment and the training of temperament.

Dr. R. E. Farr, Minneapolis: The physiological side of the subject has been brought up by the essayist, and it put me in mind of Dr. Carlson's statement made last night that filling the upper part of the intestinal tract causes a quiescence on part of the muscles. He did not go any further than the stomach, as I remember, but he touched distinctly upon the action of the latter. If this effect continues down the intestinal tract it would upset our former ideas with relation to keeping the intestinal tract empty. The toxins are high up in the intestinal tract, and when we do an enterostomy it should be made as high as possible. McKenna and others have called attention to that fact.

We all have our ideas in relation to the treatment of peritonitis. I believe the methods brought out by Alonzo Clark and Ochsner, and now being revived, are important. All of these cases of advanced peritonitis are neglected cases, and that is what we are talking about. The thing that kills is a rather late condition.

From the general side of the treatment we should give water, as the doctor says, and it is surprising in how many of these cases 1000 or 2000 c.c. are insufficient. I believe 4000 c.c. should be the lowest limit for twenty-four hours, and it should be given in a comfortable way, as suggested by Willard Bartlett, giving one-sixteenth of one per cent novocain in the solution.

The handling of the local condition is important in the treatment of localized peritonitis. I believe the most important things are these: In the first place the patient should be most carefully handled from the time he leaves his bed, or while he is in bed, until the operation is performed. We have records in our practice of six cases in which rupture of intra-peritoneal abscess has taken place during the trip to the operating room or while taking general anesthesia. In the second place, operation should be so performed as to limit the infection to the position in which it already exists when we begin to operate. In the third place, we should limit the infection to that region afterward, if possible. We may accomplish this best by packing off, emptying the abscess by suction rather than by sponging, introducing drainage, withdrawing the packs, fastening, if possible, the omentum to protect the general peritoneal cavity, and then preventing postoperative physical motion on part of the patient, and, above all, postoperative vomiting, which forces the small intestine and omentum in and out of the abscess cavity and spreads infection. This, of course, you can readily realize is best done under local anesthesia.

Dr. A. E. Benjamin, Minneapolis: I desire to subscribe to everything that has been said this morning on this subject, but as to the position of the patient I might take exception, in some instances. The Fowler position does not drain some of these patients. I turn some of them over on the face, and it is surprising how they can accommodate themselves to this position and how quickly the abscess drains.

We must give up the term of general peritonitis. Diffuse peritonitis is a term which should be used in most cases. In turning these patients over on the face I have found, where the appendix had ruptured near the gut and sloughed off, and in which also enteroliths had broken through the wall of the appendix, these enteroliths frequently escaped through the abdominal wound.

The use of gauze within the abdomen should be given up in many instances, as it injures the peritoneum and promotes adhesions. I usually employ a rubber dam to pack off the intestines.

Dr. Arthur N. Collins, Duluth: I do not think a discussion on this subject is complete without placing emphasis on the fact that if we are going to give fluid we might as well begin as soon as possible, and the more fluids we can give before the operation the better. The points made by Dr. Bacon and Dr. Farr are well taken. Everything should be done with the utmost gentleness and speed, and Murphy's admonition of getting in and getting out quickly is good.

# THE DIAGNOSIS OF CANCER OF THE UTERUS*

OLIVER C. MELSON, M.D.
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It is not my purpose to discuss the details of the signs and symptoms of uterine malignancy, but rather to present some of the early signs and symptoms which may aid in earlier diagnosis, and to emphasize the importance of making an early diagnosis. It has been estimated that the prevalence of cancer of the uterus is increasing at the rate of about 2.5 per cent each year. The latest report of the Census Bureau contains the information that about 24 per cent of deaths among women during the year were from cancer of the uterus. Bland has made the statement that in the last forty years the mortality from cancer has doubled. Cancer of the cervix is more common than cancer of the uterus; also, it is relatively more malignant and grows more rapidly, and for this reason the two conditions should be considered as separate entities.

That the treatment of cancer of the cervix is unsatisfactory is shown by the numerous methods of treatment employed. Surgery is generally admitted to offer the best chance for cure. However, less than 50 per cent of such patients come to the Mayo Clinic while the disease is in the operable stage. Ross, in a recent study, found that, depending on the type of operation, from 16 to 30 per cent of patients operated on were alive after five years. Frankl traced twelve patients operated on for early cancer of the cervix and found that eight were living at the end of five years. The operable cases in the series observed in the Mayo Clinic were sixty-four (56+ per cent) in 1917; sixty-four (45+ per cent) in 1918; forty-nine (32.9 per cent) in 1919; thirty-seven (23+ per cent) in 1920, and thirty-two (24+ per cent) in 1921. The percentages show more accurately the true status of early cases. Contrasted with these data the data from cases of cancer of the fundus of the uterus for the corresponding years are: thirty-two (44+ per cent) in 1917; thirty (43+ per cent) in 1918; fifty (49.5 per cent) in 1919; thirty-seven (35+ per cent) in 1920, and forty (47.6 per cent) in 1921.

*Read before the Minnesota State Medical Association, Minneapolis, October, 1922.

I have analyzed these cases of cancer of the cervix and fundus of the uterus with respect to the duration of symptoms, the primary symptoms, the lapse of time between the onset of symptoms and consultation with a physician, the primary diagnosis and treatment, and the condition found when the patient was first examined at the Mayo Clinic.

## EARLY SYMPTOMS AND DURATION OF SYMPTOMS

Cancer of the uterus, like cancer in other organs, begins insidiously. A vaginal discharge, more profuse than normal or changing from mucoid to watery, may be the primary symptom. Often sudden severe hemorrhage is the first sign of the disease. In women of the child-bearing period, a prolongation of the period or frequency of the menstrual flow may mark the onset of a malignant condition of the uterus. In the present series the primary symptoms in order of frequency were: bloody discharge, watery leukorrhea, hemorrhage, intermenstrual spotting, profuse leukorrhea, frequent and prolonged menstrual periods, profuse menstrual periods, pelvic or low abdominal pain, and bleeding after intercourse. Cancer of the uterus occurs so commonly after the menopause that the accompanying bloody discharge is often mistaken for a return of the menstrual flow.

As the disease progresses, the well-known symptoms of foul, watery, pinkish discharge with frequent and often continuous and severe bleeding and pelvic pain ensue. Unfortunately it is in this stage, when chance for permanent cure is usually passed, that the greater number of patients come for examination. This is particularly true in cases of cancer of the cervix. The average duration of symptoms in these cases, before the patient came to the Clinic, was eleven months. The shortest time was eleven days and the longest, six years. In the operable cases, the longest duration of symptoms was twenty-five months and the shortest, three weeks. In the inoperable cases, the shortest duration of symptoms was eleven days. In the cases of cancer of the fundus, symptoms had been present on an average of seventeen and nine-tenths months before the patient came to the Clinic. Twelve years was the longest duration and five days the shortest.

Unfortunately the duration of the symptoms and the extent of the disease do not always run parallel. In an early case, from the standpoint of operability, the symptoms may be protracted, while conversely,

in an advanced case the symptoms may have existed for a short time only, particularly in cancer of the infiltrating rather than ulcerating type, that originates within the cervical canal. Symptoms are manifest in the incipient stage of cancer of the fundus of the uterus, and because the malignancy is confined to the uterus for a considerable period, operation may be advisable even if symptoms have been present for a comparatively long time.

That the laity do not recognize the importance of the early symptoms of cancer is shown by the time interval between the onset of symptoms and the first consultation with a physician. In the cases of cancer of the cervix, the average interval was seven months; the shortest was one week and the longest two years and ten months. In the cases of cancer of the fundus of the uterus, the average interval was six and four-tenths months; the shortest was five days, and the longest, two years. In the latter cases good results are obtained by surgical procedures even after such delay, but the former are usually beyond surgical aid.

### PHYSICAL FINDINGS

The importance of a thorough physical examination cannot be emphasized too strongly; it should not only be digital but visual. The educated finger may be more valuable than the eye in most cases, but by using both, mistakes may be reduced to a minimum. It may be necessary to make two or three examinations within a few days before a definite conclusion is reached, but the repetition of examinations over a period of months is to be deplored.

Since the majority of patients with cancer of the uterus have borne children, lacerations of the cervix are common. The mucous membrane around the external os may be eroded and the lips everted. In the earliest stages of the malignant disease it is confined to a small area. The epithelial proliferation and the subsequent fibrosis produce increased firmness of the cervix, and it is these areas which should be searched for with the examining finger. Slight bleeding may be produced in the examination of such nodules and the surfaces may have a granular "feel"; these points are also of diagnostic importance. Often it is possible to see into the cervical canal during the visual examination and any suspicious appearing areas may be palpated by means of a cotton-tipped applicator.

Physical examination may not produce important evidence in cases of cancer of the fundus of the uterus. In most cases the fundus is enlarged and there may be tenderness. The chief value of the examination is in the exclusion of cancer of the cervix. Cervical polypi are sometimes associated with a malignant growth higher in the canal and the investigation should not stop with the finding of polypi. By means of the speculum, blood may be seen coming from the cervical canal.

### MICROSCOPIC EXAMINATION

If a diagnosis cannot be reached, clinically, in two or three days, material for microscopic examination should be obtained. If the examiner has satisfied himself that there is an indurated area, characteristically granular, and if there is a history of a vaginal discharge of unusual amount or character, a specimen of tissue should be removed by an experienced surgeon and examined by an experienced pathologist. The specimen should be taken and the examination made with the patient prepared for operation, so that, in case of malignancy, radical procedures may be carried out without delay. In cases with presumptive symptoms of cancer of the fundus, a diagnostic curettage should be performed and the tissue examined under like conditions. Jameson recently reviewed a series of eighty-three cases of suspected cancer of the fundus in which diagnostic curettage had been performed and malignancy was found in all. Three cases had been reported negative, and the patients had returned within one year with definite findings of cancer of the uterus.

In most of the cases in the series the patients had delayed consulting a physician and malignancy was found at the primary examination. Some patients, however, had been under observation by physicians and had received local treatments, such as caustics, douches, and tamponage, for several months. Because of the difficulty often experienced in distinguishing between simple erosion and early malignancy, local treatments should not be too long continued.

Any real advance in the treatment of uterine cancer must come through the medium of early diagnosis, since statistics show that in treated cases cure is the rule and recurrence the exception. If the efficiency in the diagnosis of cancer of the uterus is to improve, attention must be focused on the early subjective symptoms and physical signs. Closer attention must be paid to irregularities of the menstrual flow and increased vaginal discharge of any character, particularly during the meno-

pause. Cancer propaganda must be spread among the laity. Finally, the patient must be given a thorough pelvic examination when she first seeks relief and not be dismissed with the diagnosis of "merely the change of life."

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## DISCUSSION ON PAPER OF DR. O. C. MELSON

DR. R. D. MUSSEY, Rochester: We learn that the incidence of cancer is increasing. Whether this is due to the fact that prophylactic health measures in infancy and childhood are resulting in more people living to the cancer age, or whether a relatively larger proportion of people have cancer, is a question. Dr. Melson's paper is a timely one because we know that many women who reach the menopause develop cancer, and that the treatment of cancer of the cervix and uterus will be followed by the best results, if the condition is recognized early.

There are two points to be emphasized. One is in regard to the history of increased menstrual flow. Undoubtedly a careful questioning of the patient will often bring out points in regard to the menses which are of great value. Often women who consult a physician for some other reason may have an irregularity of the menstrual flow which is the only symptom of a condition which, if not cancer at the time, may develop into cancer. This point can not be too strongly emphasized.

Dr. Melson has shown very clearly that the early treatment of cancer of the cervix will be followed by much better results than treatment which is carried on when the condition is far advanced. In many cases, early cancer of the cervix can only be diagnosed by the miscroscopic method. Of course, we can often make the diagnosis by history and digital examination that the ulcer which is present is a carcinoma, but I do not believe that the question of taking a scraping of the uterus or a section of the ulcer on the cervix for microscopic examination can be too highly emphasized. Moreover, in those cases in which we suspect the condition may be carcinoma, we should be prepared to go ahead at the time the specimen is taken with whatever treatment may be necessary.

I want to emphasize two points again: (1) care in taking a detailed history, and (2) in doubtful cases, the early use of the curette to obtain tissue for microscopic examination so that a proper diagnosis may be made before the condition has become far advanced.

DR. O. C. MELSON, Rochester (closing): I called attention to the fact that the operable cases had decreased in number during the past five years. Whether this is due to an actual decrease in the early cases in which examination was made is questionable. Opinions with regard to operability are changing. That is, more patients are being treated by radium than by operation. As a curative factor radium is apparently more disappointing than operation. The radical removal of the disease is the end to be desired.

In three cases of malignancy of the body of the uterus, diagnostic curettage was negative. With a definite history of cancer, therefore, hysterectomy should not be postponed in spite of negative findings from the diagnostic curettage.

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# EDITORIAL

## Intoxicating Official Preparations

The Volstead law has a bearing not only on the alcoholic preparations commonly used as beverages, but affects the dispensing of certain official preparations ordinarily not thought of as capable of producing that much sought after "kick." Occasionally misunderstanding between physicians and druggists on this subject is the cause of friction and druggists are personally blamed by the profession for a state of affairs for which they are not at all responsible. Druggists are held responsible by the federal authorities for the manner in which they dispense alcoholic preparations and as long as we have a federal law which is specific in regard to these preparations law-abiding propensities on the part of druggists should not be discouraged by the attitude of the profession. The tabulated alcoholic preparations are for the most part merely vehicles and there is little occasion to prescribe them otherwise. Calling attention to these facts should be all that is necessary to clear up the situation.

Prescriptions calling for the following designated preparations, not in combination with other medicaments, can only be legally written by physicians holding permits to prescribe intoxicating liquors. Such prescriptions must be written upon the official prescription blank, known as Form 1403, and the pharmacist dispensing any of these preparations in this way must have paid the $25 annual license as retail liquor dealer.

The complete list of official preparations, held at this time by the prohibition authorities to be intoxicating beverages, is as follows:

Cordiale Rubi Fructus.
Elixir Anisi.
Elixir Aromaticum.
Elixir Aromaticum Rubrum.
Elixir Aurantii Amari.
Elixir Cardamomi Compositum.
Elixir Glycyrrhizae.
Elixir Glycyrrhizae Aromatica.
Elixir Taraxici Composita.
Elixir Terpini Hydratis.
Spiritus Aetheris.
Spiritus Juniper Compositus.
Spiritus Myrciae Compositus.
Tinctura Amara.
Tinctura Aromatica.
Tinctura Caramellis.
Tinctura Cardamomi Composita.
Tinctura Lavandulae Compositae.
Tinctura Zingiberis.
Vinum Aurantii Compositum.
Vinum Carnis.
Vinum Pepsini.
Vinum Pruni Virginianae.

A retail pharmacist may make any or all of the preparations listed above. He may keep them in stock and use them in compounding prescriptions or in making other preparations or compounds without incurring liability as a retail liquor dealer, provided the finished product is rendered unfit for beverage use before being dispensed, and in this connection it should be borne in mind that the responsibility respecting the unfitness of the finished product for beverage use rests entirely upon the dispenser, whether the preparation be dispensed upon prescription or otherwise.

Physicians who do not hold permits to prescribe intoxicating liquor and who may desire to prescribe any of the above preparations should take pains to add to their prescriptions sufficient additional

medicament so that the finished prescriptions will be unfit for beverage use.

If the foregoing facts are kept clearly in mind physicians may prescribe any of these twenty-three preparations without fear of disastrous consequences. Pharmacists are not permitted to fill prescriptions which are not written in compliance with the law.

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## Vaccines

MINNESOTA MEDICINE has been asked by the Sherman Laboratory to make fitting answer to a popular article appearing in Hearst's International Magazine for December. The article in question is one of a series by Paul DeKruif, Ph.D., and names specifically certain makers of stock vaccines. Sherman should take some consolation from the fact that Parke-Davis are named among the other conspirators, and their offspring, Phylacogen, is dug up from its resting place for another post-mortem on the ill-fated remains.

This is not the time nor place to rise either to an approbation of Hearst's magazine, or a condemnation of Sherman and his ilk. These popular articles are certainly an awful reflection on the reasoning powers of the average physician, who buys blindly of healing products purveyed to him through the established agencies of advertising and salesmanship. About the only voice that can be raised in his defense is the philosophical reflection that the purchaser of a motor car doesn't thereby prove that he believes everything in the literature that either preceded the car or came with it. The trouble comes from unreasonable and unwarranted advertising.

Few people seem to appreciate the elemental antagonism that properly minded doctors have toward advertising as a whole: the quacks all depend on it; speculative investment schemes (with a large score of hits from long range firing among doctors) put over their promises by advertising and salesmanship; patent medicine venders, through publicity, became real, "honest to goodness" astrologers, and actually did convert brass into gold; our most cherished traditions rightly hold absolutely against allowing any relaxation of our ethics regarding group or individual advertising.

Nevertheless, those who admittedly manufacture legitimate pharmaceuticals repeatedly allow themselves to be led into advertising methods that they must know will only antagonize the intelligent doctor and stimulate the cupidity of the man who accepts therapeutic panaceas. The vaccine mixers are no worse than many others, except that they have capitalized the doctors' present blind belief in anything that comes out of a bacteriological laboratory. No one can find any particular fault with DeKruif's article—he expresses the average sane doctor's attitude toward vaccine, even though he is unversed in actual therapeutics, and signs himself as a Doctor of Philosophy.

Sherman probably resents the accusation that his vaccines are "fakes." Theoretically, that might involve a criticism of their physical properties or the therapeutic purposes for which they are designed. Much greater agreement will be found in discussing the latter than the former phase. Some good physicians believe in vaccines; others are unwilling to condemn them all unequivocally; a great many see in them only foreign protein substances that, aside from a few specific exceptions, yield a common allergic response. Regarding the system of therapeutics and the cataloguing of diseases for which numbered vaccines are specific, there can be no disagreement: this represents the same legalized quackery as has an exact counterpart in the polyglot mixtures of gland extracts and intravenous medicaments. From the two extremes of our great country comes presently a flood of medical advertising literature: the West gives us a hormone feast, designed to meet any disease exigency; the East, a flood of ampules, the contents of which can be "safely introduced by anyone with a very little experience." In fact, the obliging "Intravenous Companies" have been known to send around trained nurses to remain long enough in certain doctors' offices to "teach them the method." The whole commercial enterprise can only arouse our great disgust. Think of any company, having any presumption to scientific accuracy, advising the routine administration of fifteen grains of iodid intravenously for goiter!

There are numerous commercial pharmaceutical houses that have refused to stoop to such procedures, and they should be encouraged. The American Medical Association should be backed up. It is conceivable that they may at times make errors in judgment in this very difficult task of standardization, but there is absolutely no question of where we should stand. MINNESOTA MEDICINE is wholeheartedly back of their own and allied propaganda for reform.

E. L. T.

## Some Data on the Alleged Lack of Physicians and Increase of Irregular Practitioners

It is frequently asserted that the rise of osteopathy and chiropractic is due to a shortage of physicians; that these irregular and poorly educated practitioners are taking places in the country that should be filled by regular doctors; that chiropractors and osteopaths are being made health officers in country towns because no regular physicians are available. I do not believe that these statements are true. I think, moreover, that their reiteration tends to do harm by creating the impression that there is a shortage of doctors. Consequently there is a tendency to burden the schools with an excess of students and lower the standard of instruction.

During the last two years a careful study has been made of all requests for doctors or information in regard to locations that have come to my office. We ask each informant to fill out a blank giving name of place, population, railroad connections, character of country, condition of roads, nearness of physicians, etc.

The inquiries as a rule fall into two classes. The first are towns of 200 to 700 people, in well settled counties, with doctors within five to twelve miles. Some of these places formerly had doctors. Some never had a physician. It is evident in most cases that (a) the people are already reasonably well cared for by the doctors in the neighborhood, and (b) that it would be doubtful whether another physician in the district could make a living.

The second class consists of a few small, isolated and usually new communities of 300 people or less. There may be no doctors within 25 to 50 miles. There is no doubt that sick people in such communities frequently suffer for lack of medical care. These places could not support a doctor on the fee basis. Some such communities are approaching the matter on a co-operative basis with fixed salary offered, and are getting doctors.

Occasionally we get notice of an opening in a large place (1,000 or over), but always we have found that there is already at least one doctor on the ground.

Recently I canvassed all our replies for the last two years and sent a new questionnaire relative to irregular practitioners. To this inquiry 47 replies were received from small towns of Minnesota, North and South Dakota and Montana.

Thirty towns reported no doctors, no osteopath, no chiropractor. Fifteen towns have a doctor but have no osteopath or chiropractor. Two towns have each one doctor and one chiropractor. All these places are of less than 1,000 population and most of them less than 500.

*In not a single place do we find an osteopath or chiropractor serving the people with no regular physician available.* This seems to me to settle the contention that the irregulars are filling the alleged need for doctors in small country places.

When we consider larger rural places—towns of 1,000 and over—one practically always finds one or more physicians. Of course, the irregulars are also likely to be found in such towns. The point is that they are *not taking the place* of the doctor, but are *additional to him.*

There are at present in Minnesota three health officers who are osteopaths. These are all in large towns where physicians are located. No chiropractor is a health officer at the present time. A few have been in that position in previous years; but, according to the Executive Secretary of the State Board of Health, they were always in towns where doctors were located.

Comparing the American Medical Directory, edition of 1921, with the list of incorporated places in Minnesota, census of 1920, the following facts appear. Six places of over 1,000 population appear to have no resident doctor. They are Edina, Richfield (both close to Minneapolis in Hennepin County), West St. Paul, North Mankato, South Stillwater and Kinney. All these, however, are suburbs of large cities and have adequate medical services. Indeed in several of these places there are resident doctors, but they have offices in the larger nearby cities and are listed there by the American Medical Association Directory.

Minnesota has 64 towns of 750 to 1,000 population. There doctors in 58 of these towns. The six without doctors are Brooklyn Center, Crystal and Golden Valley (suburbs of Minneapolis), Waite Park (suburb of St. Cloud), and Franklin, St. Louis County.

We conclude that from a practical standpoint there are no places in Minnesota above 750 in population which are without a physician.

Minnesota has 85 villages of 500 to 750 population. There are doctors in 74 of these towns, or 87 per cent.

Minnesota has 202 villages of 250 to 500 population, and there are doctors in 127 of them, or 63 per cent.

The osteopaths and chiropractors go to the larger cities and towns just as the doctors do. They do not go to the small villages where there is no doctor. Whatever reason there may be for the irregulars' existence, it is not to fill vacancies due to a lack of physicians. The people are not, as some say, crying for poorly prepared doctors because they cannot get better ones. There is no need, at least in the Northwest, to lower the standards of medical education or to found more medical colleges or to increase medical school classes beyond the limit of efficient teaching.

E. P. LYON,
Dean of Medical School,
University of Minnesota.

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The article by Dr. Michel Zlatovski, recently of Petrograd and now located in Duluth, appears in this number of MINNESOTA MEDICINE. The information contained in this account of the medical conditions in Russia is a first-hand report and therefore the more impressive. After this paper was presented before the St. Louis County Medical Society, such an impression was made upon those present that a committee consisting of Drs. W. Bagley, Arthur Schwartz, and W. A. Coventry was appointed to receive contributions in order that food might be provided for some of our fraternity in Petrograd. A small sum was subscribed at the meeting, but the need among the physicians in Petrograd is so great and pressing that we are hastening to publish this most interesting paper and call the attention of Minnesota physicians to this opportunity to assist their professional brothers in obtaining food. Contributions may be sent to Dr. W. Bagley, 500 Fidelity Building, Duluth, Minnesota, or to any of the other members of this committee.

The following communication has been received from Geneva under date of November, 1922, which further calls attention to the plight of doctors in the Province of Nikolaev, Ukrania:

Dr. Haigh, a member of the Health Committee of the League of Nations, and health expert attached to the Nansen Organization, communicates the following details on the present position of the doctors and health officers in the Province of Nikolaev:

"The assistance given to doctors has so far been negligible, and no organization for their relief exists in the Province. A few doctors who have friends abroad have occasionally received parcels of foodstuffs.

"All goes to show that in the coming winter the famine and conditions of life generally will be still worse than in the past, unless help is sent from abroad.

"The doctors receive their salaries only after long delays. Their tragic position continues to grow worse. During the past winter some supplies were officially distributed to them, but even this relief has now come to an end. The medical staff must meet their necessities as best they can. Very many doctors are only able to subsist by the sale of their furniture, or any objects which they may possess. Even those who have the best practices are in need of clothing. The poorer doctors who live in remote districts have to rely on the help of such peasants who have themselves managed to escape ruin.

"The situation in the Province of Nikolaev gives some idea of the conditions which exist in other parts of the country.

"Without the official ration, which consists of an English pound of maize distributed to a portion of the staff in the hospitals, life would have been impossible in these establishments. This relief has now come to an end. At the present moment a hospital doctor, if he is paid, receives 27 million roubles (in September this was equivalent to £1, but at the present moment it is less than 8 s.) The hospital sisters receive about 20 million roubles, and other members of the staff still less. A great number of persons belonging to the staff of the hospitals have died at their posts."

This picture clearly shows the tragic position of the Russian doctors in the famine districts, and the urgent necessity for providing them with relief.

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## OBITUARY

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### DR. ALBERT A. CAMPBELL

Dr. Albert A. Campbell died at his home in Ogema, Minn., Monday, December 18, 1922, after four days' illness from pleurisy, terminating in lobar pneumonia. Dr. Campbell was a graduate pharmacist and had conducted a drug store in various places in St. Paul for about twenty years. He graduated from the Medical Department of the University of Minnesota in 1909 and practiced in St. Paul for seven years, coming to Ogema in 1916, where he had a general practice and specialized in eye, nose and throat work. His death occurred from pneumonia contracted from exposure while riding about the country a few days before his death.

Dr. Campbell was a man of wide activities and of great physical energy, accompanied by great personal interest in his patients. His practice was extensive and covered a large section of both Becker and Mahnomen Counties. His abilities as physician, his kindness and good will as a man,

his interest in public affairs and his wide experience in pharmacy and medicine, made him a leader in the community, and his loss is felt keenly by the community which he served so well. It can be truly said of him that he sacrificed his life in the performance of what he thought his duty. Dr. Campbell was a member of the Alpa Kappa Kappa medical fraternity, was a member of Mahnomen Lodge, A. F. & A. M., and a Royal Arch Mason.

Funeral services were held at Mahnomen Tuesday evening, December 19, and the remains taken to St. Paul for interment.

Dr. Campbell is survived by his wife and two adopted daughters.

### DR. J. PALMER JOHNSON

Dr. J. Palmer Johnson, aged 84, formerly a well-known physician in Blooming Prairie and Owatonna, died Saturday, December 9, 1922, at Lynn Haven, Florida, where he had made his home for the past ten years.

Dr. Johnson was born in Windham County, Connecticut, on February 22, 1839, and came from the East among the pioneer settlers who came to settle at St. Charles in 1856. At St. Charles he studied medicine and pharmacy under local druggists and physicians and later attended Rush Medical College at Chicago, graduating in 1876. Previous to his graduation, in May, 1874, he moved to Steele County and settled in Blooming Prairie, and after his graduation took up the practice of medicine in that village.

At the outbreak of the Civil War he enlisted for three months and as the quota was already full he was discharged. Later he enlisted in Company A, Second Minnesota Cavalry, and served until the end of the war.

In September, 1892, he moved to Owatonna, establishing a wide practice there. Ceasing his medical efforts in 1902, he took his wife to Cannon City, Colorado, for her health. She died there in 1903. Afterward he returned to St. Charles to make his home with a niece, Mrs. J. C. Hendee, and about ten years ago moved to Florida.

### DR. M. N. TRIPLETT

Dr. M. N. Triplett, a pioneer physician of Floodwood, Minn., died at the age of 68 at his home Friday, December 8, 1922.

Dr. Triplett was born in Winchester, Pa., in April, 1854. He received his medical training at the University of Louisville, from which institution he graduated in 1895. He moved to Floodwood in 1902 to practice his profession and later established the Floodwood Broadaxe, a weekly paper now out of existence. Dr. Triplett was a candidate several years ago for the state legislature from the Fifty-ninth District.

He is survived by his wife and one daughter, Mrs. H. H. Hovry of St. Paul, and one sister, Mrs. A. R. Adams of Charlestown, W. Va.

### DR. L. S. B. ROBINSON

Dr. L. S. B. Robinson, who formerly practiced in St. Paul, died while on sick leave from Ft. Bayard, New Mexico, at San Diego, California, December 17, 1922. The cause of death was a perinephritic abscess and complicating heart disease.

Dr. Robinson left St. Paul some years ago to become superintendent of the Nebraska State Tuberculosis Sanatorium, and at the time of the war entered the army. He was still in service at the time of his death.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### LYMANHURST SCHOOL FOR TUBERCULOSIS CHILDREN

February and March, 1923

PROGRAM OF THE CONSULTING MEDICAL STAFF

All meetings will be held at 8:00 P. M. in the Lymanhurst School, 18th and Chicago.

F. E. Harrington, Commissioner.

J. A. Myers, Chief of Staff.

February 13.—The Tuberculosis Crusade in Minnesota. H. Longstreet Taylor, M.D., Superintendent, Pokegama Sanatorium; Chief of the Tuberculosis Service, St. Paul City and County Hospital.

February 27.—Educational Problems in the Special School. Miss Kathrine Young, Principal of the Lymanhurst School for Tuberculous Children.

February 27.—A Study of the Gastro-Intestinal Tract of 250 Children in the Lymanhurst School. C. B. Wright, M.D.

March 13.—Extrapleural Thoracoplasty. E. S. Mariette, M.D., Superintendent and Medical Director, Glen Lake Sanatorium.

March 27.—Bronchiectasis in Childhood. R. G. Allison, M.D., and R. W. Morse, M.D.

March 27.—The Social Service Aspect of the Lymanhurst Outpatient Service. H. Lippman, M.D.

All persons interested in tuberculosis are invited to attend these meetings and participate in the discussions.

### NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

Dr. F. W. Behmler of Lafayette was elected president of the Nicollet-Le Sueur County Medical Society at the annual meeting held December 13, 1922, at Le Sueur. Other officers elected were: Dr. S. Ericson, Le Sueur, vice president; Dr. J. E. Le Clerc, Le Sueur, secretary; and Dr. F. P. Strathern, St. Peter, treasurer.

A banquet was served at 6:30 o'clock, followed by a program which included a talk by Dr. J. W. Daniels of St. Peter on the climate of Arizona and a paper on "Pemphigus Neonatorum," with a report of two cases which was read by Dr. Behmler.

### SIOUX VALLEY MEDICAL ASSOCIATION

The fifty-fourth semi-annual meeting of the Sioux Valley Medical Association took place Thursday and Friday, January 25 and 26, 1923, at the Martin Hotel in Sioux City, Ia.

Speakers of prominence who appeared on the program included: Dr. A. J. Ochsner, Professor of Surgery, University of Illinois; Dr. Martin Fischer, Professor of Physiology at the University of Cincinnati; Dr. Wm. Engelbach, Professor of Medicine at the St. Louis University; Dr. Dean Lewis, Professor of Surgery at the Rush Medical College; Dr. Clifford Grulee, Professor of Pediatrics at Rush Medical College; Dr. M. A. Blankenhorn, of the Department of Medicine, Western Reserve University, Cleveland, Ohio; Dr. J. S. Evans, Jr., Professor of Clinical Medicine at the University of Wisconsin; Dr. Henry Schmitz and Dr. Lewis Bremerman of Chicago.

### RED RIVER VALLEY MEDICAL SOCIETY

The annual meeting of the Red River Valley Medical Society was held in the Society rooms at Crookston, Thursday, December 21, 1922. An attendance of twenty members was reported.

Papers were read by Dr. M. O. Oppegaard, Crookston; Dr. O. F. Melby, Thief River Falls, and Dr. George Fahr of the University of Minnesota Medical School.

Officers elected for the ensuing year were: Dr. O. E. Locken, Crookston, president; Dr. L. L. Brown, Crookston, secretary-treasurer; Dr. J. Ohmstad, McIntosh, vice president.

The next meeting of the Society will be held in Crookston some time in March.

### CENTRAL MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Central Minnesota Medical Association was held in Willmar Thursday, December 14, 1922. Dr. John C. Jacobs, Willmar, was elected president and Dr. C. L. Scofield, Benson, was elected secretary-treasurer.

The program included "Public Health Work as a Menace to Regular Medicine," by Dr. C. L. Scofield; "The Future of Medicine," by Dr. John C. Jacobs, and "Injuries to the Knee Joint," by Dr. K. A. Danielson.

Following the regular session a banquet was served to the visiting physicians. Wives of the members were entertained at the home of Mrs. I. C. Benson in the afternoon.

## OF GENERAL INTEREST

Dr. Mary S. Knight and Dr. E. Asbury, both of Rochester, were married in Cincinnati, January 2.

Dr. Walter N. Rowley, Rochester, has returned from a trip to Virginia and Washington, D. C.

Dr. E. H. Nelson of Chisholm has returned from a ten days' trip to Chicago and Detroit, Michigan.

Dr. A. W. Adson of Rochester addressed the Chicago Medical Society at their meeting in December.

Dr. Lida J. Stacy of Rochester read a paper before the South Dakota Medical Association in December.

Dr. and Mrs. W. F. Braasch of Rochester are the parents of a baby boy, John William, born December 11, 1922.

Dr. Guy D. Murphy, who has been in Keeline, Wyoming, for several years, is now located at Murdock, Minnesota.

A ten pound baby boy, John William, was born December 28, 1922, to Dr. and Mrs. W. L. Benedict of Rochester.

Dr. J. B. Gumper, formerly of Becker, Minnesota, located in St. Cloud for the practice of medicine the first of the year.

Dr. I. F. Seeley of Northfield was recently elected city physician to fill the vacancy left by the death of Dr. J. G. Phillips.

Dr. John A. Regner, formerly of Fertile and Winger, Minnesota, has moved to Warren, where he will continue his practice.

Dr. and Mrs. J. D. Paradine of Duluth are in the East, where Dr. Paradine is doing medical research work in New York.

Dr. and Mrs. C. S. Williamson of the Mayo Clinic are the parents of a baby daughter, Florence Marian, born December 14.

Miss Mona Sibeck of Little Rock, Arkansas, and Dr. Vern Hunt of Rochester, were married in Little Rock, December 28.

Dr. H. O. Foucar of the Mayo Clinic was married to Miss Janet Stevens of London, Canada, December 14, 1922, in London.

Miss Dorothy Cannon of Haddenfield, New Jersey, became the bride of Dr. P. N. Jepson of Rochester in Haddenfield, December 28.

Richard Hugh and Robert Charles are the names of the twin sons of Dr. and Mrs. H. B. Grimes of Madelia, who were born December 21, 1922.

Drs. B. J. and A. F. Branton of Willmar have opened their offices in the Willmar Hospital, which has recently been enlarged and re-equipped.

Dr. C. M. Adkins, for the past three years of Thief River Falls, has returned to his former location at Grygla, where he will have charge of the hospital there.

Dr. P. C. Davison of Willmar opened the Davison Hospital the latter part of January. The new hospital has accommodations to care for fifteen patients.

Dr. E. S. O'Hare, formerly of Powers Lake, N. D., has moved to Bellingham, Minnesota, where he took up the practice of medicine the latter part of December.

Dr. and Mrs. J. B. Dunn of St. Cloud are rejoicing over the arrival of their first grandson, John Robert Stevenson of that city, who has been named for his grandfather.

Dr. Louis Hiniker, who recently completed his training at the City Hospital, St. Paul, has become associated in the practice of medicine with Dr. F. J. von Bohland of Belle Plaine.

Dr. W. F. Cantwell of Little Fork has been chosen as one of twenty graduates of the University of Minnesota Medical School to revise the medical curriculum of the college.

The Mounds Park Sanitarium, St. Paul, has announced

the completion of its psychopathic department, which is organized along advanced lines for treatment of the milder psychoses.

Dr. E. D. Osborne, who was associated with the Mayo Clinic and Foundation for the last three years, left December 23 to become an associate with Dr. Grover W. Wende of Buffalo.

Eleven fellowships were granted to applicants by the Mayo Foundation January 2, 1923. Of these, one is in medicine, one in pediatrics, one in pathology, and eight are in surgery.

Dr. Robert W. H. Guilmette of Worthington has moved to Argyle, Minnesota, where he will practice medicine. Dr. Guilmette succeeds Dr. J. A. Roy, who is now practicing in Red Lake Falls.

Dr. John L. Haskins, who has been located at Morgan, has removed to Northfield. Dr. Haskins sold his practice to Dr. J. Adams, who formerly was at Morgan and is now coming back from California.

Dr. C. R. B. Crompton, who for the past three years has been a Fellow in the Mayo Foundation, left Rochester December 21 for Toronto, where he will become an associate with the Lockwood Clinic.

Drs. W. I. Lillie, H. L. Goss, E. G. Senty, N. H. Copenhaver, L. D. Powell, and C. A. Crompton of Rochester received the degree of Master of Science from the University of Minnesota in December.

Dr. Warner Ogden, who recently completed a six months' course in surgery in New York, has returned to St. Paul, where he is associated with his father, Dr. B. H. Ogden, with offices at 718 Lowry Building.

Word has been received of the appointment of Dr. Harry W. Sargeant as head of the Milwaukee County Hospital at Milwaukee, Wisconsin. Dr. Sargeant has been acting head of the hospital for the past six months.

Dr. James B. McEnaney, who has been practicing at Holland for the past few months following his practice of 30 years at Ashton, Iowa, has located at Ruthton, Minnesota, where he took up his practice last month.

Dr. C. F. Palmer, formerly of Chicago, has located permanently in Albert Lea in association with his father, Dr. W. L. Palmer. Dr. C. F. Palmer has been practicing in Chicago hospitals for the past two years.

Dr. Stanley R. Maxeiner has severed his connections with the Surgical Clinic of Minneapolis and is now located at 301 Physicians and Surgeons Bldg., Minneapolis, where he is continuing his practice in surgery.

Dr. S. Amberg of the Section on Pediatrics of the Mayo Clinic has been granted a two months' leave of absence from his duties at the Clinic, and has gone to Europe to visit clinics in Holland, Germany and Austria.

Announcement has been received of the marriage of Miss Amalia C. Olson of Minneapolis and Dr. Joseph C. Baird of Eau Claire, Wisconsin, which took place at the home of the bride's sister in Minneapolis, December 10.

A Thanksgiving Day wedding was that of Dr. A. H. Nerad and Miss Florence Meisch, which took place at Argyle, where Dr. Nerad has his practice. The bride formerly taught Domestic Science in the schools of Argyle.

Dr. Manuel C. Elmer, associate professor of sociology at the University of Minnesota, was chosen president of the Hennepin County Tuberculosis Association at their meeting in December. Dr. Elmer succeeds Dr. Henry Ulrich.

Dr. C. T. Ekelund, formerly of St. Paul, became associated with Drs. T. F. Hammermeister and F. J. Pelant of New Ulm, January 1, 1923, and they will practice under the name of the Ekelund, Hammermeister and Pelant Clinic.

Announcement has been made of the marriage of Dr. Baldwin Borreson of Bemidji and Miss Alice Graves of Duluth, which occurred Saturday, December 30, 1922, in Duluth. Dr. and Mrs. Borreson are now at home in Bemidji.

Dr. William A. Kennedy, formerly associated with Dr. W. E. Patterson of the Todd-Patterson Clinic, Minneapolis, is now a member of the St. Paul Clinic. Dr. Kennedy was a Mayo Fellow in Ophthalmology prior to his location in St. Paul.

Dr. J. T. Bowers of River Falls, Wisconsin, and formerly of Lake City, Minnesota, has accepted the position of chief surgeon of the Swedenburg hospital at Thief River Falls. Dr. Bowers recently completed a course of postgraduate work in Chicago.

Dr. W. N. Rowley, associate in the Section of Obstetrics of the Mayo Clinic, resigned in January to locate in Huntington, West Virginia, where he has been appointed to the staff of one of the local hospitals, and where he will engage in private practice.

Dr. Virgil J. Schwartz of Minneapolis is now in Vienna, where he is continuing the study of the eye, ear, nose and throat. He will also visit clinics in Budapest, Hamburg, Berlin, Paris and London. Dr. Schwartz expects to remain abroad several months.

Dr. R. E. Swanson of Alexandria and Miss Katherine Jacobson also of Alexandria were married December 28, 1922. Dr. and Mrs. Swanson will make their home in Minneapolis, where Dr. Swanson will take a three years' postgraduate course in medicine.

Dr. Henry F. Helmholz, chief of the Division of Pediatrics at the Mayo Clinic, Rochester, was the principal speaker on the program of the meeting of the Lymanhurst staff, January 23. "Primary Infection in Tuberculosis" was the subject presented by Dr. Helmholz.

Dr. John J. Gelz of Richmond, who has been in Vienna, Austria, for special study, is now in London and after a short stay there will return to America, where he plans to take a course in American methods of refraction in Philadelphia before returning to Richmond.

In October, 1922, Dr. E. S. Boleyn of Stillwater was robbed of a Leitz microscope, Zeiss oil immersion lens and a Bausch-Lomb mechanical stage. This apparatus was taken from his office and attention of the profession is called to the fact in case attempts are made to dispose of any of the parts mentioned.

Dr. A. H. Parks of Minneapolis has been appointed to the Board of Public Welfare of Minneapolis to succeed Dr. Archa Wilcox, who resigned recently. Dr. Parks has been chief surgeon at the Minneapolis General Hospital for the last four years and has been connected with the hospital staff for fifteen years.

"Some Etiological Factors in Surgical Tuberculosis in

Childhood" was the subject of an address given by Dr. Wallace H. Cole, of the State Hospital for Crippled Children, St. Paul, before a meeting of the consulting medical staff of the Lymanhurst School for Tuberculous Children, the evening of January 9. Dr. Thomas Ziskin, Minneapolis, also read a paper on "The Heart in Tuberculosis."

An extensive program of public health lectures is again being given at Rochester this winter. Dr. L. D. Bristol of the University of Minnesota Medical School gave the lecture for the week of January 4. Health talks are given each week under the auspices of the Health Department and have been the means of conveying information on preventive medicine and hygiene to a large number of people.

A decision in favor of the Minnesota State Medical Association was filed by Judge F. M. Catlin in Ramsey County District Court, December 30, in answer to the suit brought against the State Association in regard to the legality of its action in revoking the Brown-Redwood County Medical Society charter in 1918. The charter was revoked because of refusal of the Brown-Redwood Society to expel Dr. L. A. Fritsche of New Ulm after he had been pronounced guilty of disloyalty by the State Public Safety Commission. The petitioners asked for a writ of mandamus to compel the State Association to reinstate the charter and Judge Catlin's ruling was made in denying the writ.

The Northwestern Medical Officers' Association of the World War held its third meeting on the evening of January 9, 1923, at the St. Paul Hotel. Advantage has been taken of the assembly of doctors at St. Paul Clinic Week for the meetings, but it is planned to hold the next meeting at a different time, the exact date and place to be determined later.

At this year's meeting the group of doctors present was addressed by Colonel Munroe, head of the reserve organization in this district, and Major R. W. Whittier, executive of the medical reserve in this territory. An explanation of the general plan of the reserve army and the medical reserve in particular was presented and those present were urged to join. Attention was called to the difficulties encountered at the outbreak of the World War incident to lack of preparation. It was pointed out that in case of a similar future national emergency there may not be sufficient time to organize and train medical men as in the recent conflict. The advantage of present assignment to desirable type of medical work and the opportunity through correspondence courses and training camps to obtain advancement in the reserve were emphasized. In case of a repetition of a national emergency the medical profession will respond as it did in the World War and the arguments why medical men should join the reserve are irrefutable, especially as the reserve medical corps cannot be called out for minor emergencies nor is attendance at training camps compulsory. Members of the profession are urged to join at once and former medical officers will be accepted without examination. Communications may be addressed to Major R. W. Whittier, 400 Kasota Building, Minneapolis.

Dr. J. Frank Corbett, Minneapolis, was elected president of the Northwestern Officers' Association; Dr. W. F. Maertz, New Prague, vice president, and Dr. Stanley L. Maxeiner, Minneapolis, secretary-treasurer. An informal and most enjoyable evening was spent and the meeting pronounced a great success by all present.

# PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

## Meeting of December 13, 1922

Dr. H. Longstreet Taylor presiding.

Dr. F. W. Schlutz reported a case of intestinal intussusception.

The case I wish to report tonight was seen in consultation with a local surgeon about ten days ago. The baby had been brought to him from out of town for a diagnosis of some acute abdominal condition. It was a six months old baby, apparently in an extremely critical condition.

There had been tremendous loss in weight. Both cornea were completely destroyed by ulceration, and the baby was in a semi-comatose condition. The illness had developed rather suddenly about two weeks before. The baby was in perfect health before the illness began. The onset was sudden, with some acute pain simulating colic, and attended by moderate vomiting. The baby did not seem the same after these symptoms developed, and continued uneasy and occasionally in pain.

About the second day a reddish dark mucus made its appearance, and there was some showing in the passage that indicated the presence of blood. No definite diagnosis was made by the local physician except that he suspected that some acute abdominal condition, most likely nutritional, was present. He came to this conclusion about the fourth day of the illness. All food had been withheld for four days. The baby began to vomit on the second day and continued vomiting occasionally for the next four or five days. It seemed continually strained, but had very little stool and no stool after the third day.

Fever developed about the second day. Cathartics were given on the second day, but no stool followed. There was no history of any tumor having been felt at any time. The bloody discharge ceased after the fifth day. The baby continued to grow worse.

On the tenth day of the illness there seemed to be a complete prolapse of the rectum. This continued until the baby was brought into the city. The infant was practically moribund when seen. Emaciation was extreme, and there was a continual slight grunting effort at straining. The rectum showed an extrusion of about four inches of the bowel. Examination showed that this was bowel and was not a prolapse of the rectum. No tumor mass was felt in any part of the abdomen. The prolapsed bowel could be replaced quite readily. No operative procedure was undertaken that night.

The baby was almost completely dehydrated, as no liquids had been given for the last four or five days. A 5 per cent glucose solution was given by the peritoneal route, and the operation attempted the following morning. A complete intussusception was found and the bowel was gangrenous at the point where the intussusception began, and was apparently in the process of amputation. If the baby had lived this would probably have resulted in a complete expulsion of the intussusceptive portion. There was only a moderate and local evidence of peritonitis. The baby died at noon on the day of the operation.

DR. WHITE: Could you locate the point at which the intussusception had begun?

DR. SCHLUTZ: It was rather impossible to do this on account of the gangrenous condition of the tissues, but it seemed to be the usual point of entry of the small bowel into the cecum. The interesting feature of this case to me is the complete extrusion of the bowel, and the length of time the baby lived with so serious a condition present in the abdomen. Usually the intussusception cases succumb before the end of sixty or seventy-two hours, unless the condition is recognized early and prompt surgical relief given.

DR. A. SCHWYZER: I think that in these cases the diagnosis is not always easy and still if we have the picture in mind we can hardly mistake it. Not so very long ago we had one case where the ileum was in the cecum and the large gut inverted clear down to the descending colon. This had not lasted so very long and was not even necrotic. The child got well, though the colon burst on disinvagination.

In connection with the treatment I would like to say that a number of methods to avoid reinvagination have been proposed. I had a number of cases and I make a fixation of the lowest ileum to the ascending colon something like a double-barrel shotgun effect. I fastened the ileum for nearly 3 inches (or 2 inches, according to the age of the child) to the ascending colon; and sometimes we have, in addition, fixed the region of the ileocecal valve toward the promontory, and in this way we have had no reinvagination.

DR. H. B. SWEETSER: This case is of two-fold interest. First because of the effort made by nature to cure the condition of spontaneous amputation of the diseased intestine, in which she almost succeeded. It is also surprising that the child was able to withstand so serious a lesion for so long a time as fifteen days.

The second and much more interesting point is that a diagnosis should not have been made at least by the second day. A history of sudden intense pain in the abdomen repeated, with intervals in which the child is apparently perfectly well, even if the doctor sees him only in these intervals, should make the diagnosis of intussusception very clear.

Much has been said about educating the public in matters medical, but it seems as if the doctors also could stand a little more education in clinical signs and symptoms.

I was interested also in the statement that the child was allowed to go for five days with practically no fluid and was markedly dehydrated. This neglect to supply fluid is a serious oversight in any case, and not infrequently is the principal cause of the threatening symptoms. Several months ago I was asked to see a child seven days old who was supposed to have obstruction of the bowel. The child had vomited a great deal and no effort had been made to supply water except by mouth. The temperature was 103-104 degrees and the baby was much emaciated. The *x*-ray did not show obstruction, and water given subcutaneously and intraperitoneally promptly resulted in improvement and eventual recovery.

DR. L. C. BACON reported a case of perforated chronic ulcer of the stomach.

A business man of 74 years of age, still in active life and of vigorous make-up, ate his usual dinner a few days since, and a few minutes after experienced some pain in the left hypochondrium. The pain gradually increased through the night. I saw him the following morning and found his temperature slightly subnormal, pulse of fairly good character and about 100 per minute.

Physical examination was negative except for marked rigidity and tenderness of the left hypochondrium. He stated that he had never had any stomach trouble and that he had been feeling particularly well for several days, but had taken a dose of compound licorice powder the night before, which had caused several evacuations of the bowels.

I advised an enema and gave ⅛ of a grain of morphin hypodermically, but without relief. He was sent to the hospital and an attempt made to pass a stomach tube, but this could be inserted only to about the cardiac orifice. As the patient was rapidly growing worse it was decided to operate under the opinion that we were dealing with a perforated ulcer or obstruction from unknown cause. While being moved to the operating room the patient suddenly became cyanotic and his pulse mounted to 150. A hypodermoclysis was given and an incision, under local anesthesia, was quickly made through the left rectus. Upon opening the peritoneum gas and gastric contents escaped and the tremendously distended stomach protruded. The distention had caused a rotation of the stomach and a valve-like closure of the cardiac orifice. There was a perforated chronic ulcer on the posterior wall of the stomach near the greater curvature and nearer the cardiac than the pyloric orifice. The patient's condition was so desperate that no effort was made to close the perforation, but drains were placed and the stomach distention relieved by means of a catheter passed through a purse-string suture. With the relief of tension the pulse dropped to the neighborhood of 100 and the patient returned to bed. Death ensued in a few hours.

The history of no previous stomach trouble and the gradual increase of pain made the diagnosis difficult in this case.

DR. ANGUS MORRISON read his Thesis entitled "Mental Hygiene and Our Universities."

Discussions by Drs. Herbert Jones, Corbett, White (S. M.), Cross, Bacon, Ramsey and Dr. Morrison in closing.

DR. HERBERT JONES: I think the Society ought to thank Dr. Morrison for bringing up this subject, which is out of the usual line of our discussions. It certainly ought to be interesting for a body of this kind. There has been during the last few years a great tendency to govern health along public lines. This phase is probably the last one to be taken up by the state health authorities.

The greatest danger I see in it is in the untrained or poorly balanced instructor examining students and trying to judge the student's mental condition without sufficient basis. I can look back and see in my class at school that a good many students who were regarded as poor students

have made good, and a large number of those who were valedictorians and Phi Beta Kappas were never heard of afterwards. That is, the scholars who conformed to the wishes of the professors were given high marks, while some nondescript student—a mere private in the ranks—came forward in after years and made a good record. It seems to me there is the danger in letting the college professor say who shall be admitted to the special courses.

As the world progresses, the ability to think clearly and to control one's mental activities are going to be the important things in the world and certainly they need the attention of our universities.

DR. CORBETT: I perhaps should hesitate to discuss this problem, but it seems to me that our consideration of mental hygiene in the University comes too late to benefit the individual very materially. The early years of a child are the important ones, and if this education has been neglected we may not hope to correct much of this deficiency that may develop during the college years.

In our present educational methods, are the requirements such as to develop a strong mentality? Personally, I feel that the children of the present generation are missing many things that the older generation had the advantage of. When we started to school we were taught the alphabet; we were taught to spell correctly; we were taught to figure correctly; and one who did not accomplish these things did not advance any in his educational career. Today go into the university and how many students can spell correctly? How many can write, and how many can figure the simplest problem? I think we should go back some in our educational system and correct these things. It is not merely a matter of selecting individuals to environment, but to develop the great majority of individuals so that they may master these environments. Our educational system should be one of development and discipline of the individual.

DR. S. M. WHITE: The lines which the discussion has already taken illustrate the breadth of the subject which Dr. Morrison has brought up. It might lead into the education of the child and the practicability of educational methods in our institutions of learning.

Dr. Morrison's paper, as I take it, would bring up the question of mental hygiene for students, making it a common property of the university student, and would bring up also the question of the early discovery of aberrations, which, I take it, was also one of the themes which Dr. Morrison was discussing. My own discussion I will limit to that portion of the essay.

Just as in our movements toward better health conditions in all lines, the so-called Students' Health Service is already making headway in the early discovery of infectious diseases among students, and I believe successfully controlling epidemics better than they have ever been controlled in the past, and in that way contributing to better health in the student body. Just so, a study of the mental problems which confront the student is of benefit to the student body.

We are definitely in the period of infancy in mental hygiene. One interesting phase of that was brought out by the study made in recent years of entering students in the Medical School. An effort was made to study the applicants for admission so far as mentality tests were concerned. It is believed now by those who were interested in it at the time that those mental tests did not adequately test the student for the work which he was intending to follow. We realize that the best tests are those which are determined by the history of that individual, which study his reaction to his normal everyday life. The tests of cardiac function which make him step up on a chair ten times and then measure pulse rate and blood pressure, taken in the office, seem to have many sources of error. Just so the mental test may have a good many sources of error, such as the physical condition of the student at the time the tests are taken, and other sources difficult to evaluate.

The kind of study which the essayist has proposed seems to me to be one which has a real field. The proposal to have in connection with the Students' Health Service an individual thoroughly trained in the study of the mind, who shall confer with and study out the problems of the student, is a good one. Such an expert student of the mind should be delegated to inquire early into the difficulties of those students who are having them. I believe this would be productive of a very great advance because as a long-time teacher I have seen instance after instance in which if a student could have been advised early about his whole life and its difficulties it would have gone far toward helping in the adjustment. There is a fairly large number of those people who are entering our institutions of higher learning and who fail to secure the best that can be given by the institution. Mental hygiene properly directed and applied in this one field alone would more than justify any expense involved.

DR. CROSS: To me the most interesting feature of Dr. Morrison's paper was the response, or lack of response, to his questionnaire, showing the lamentable lack of the sort of thing which he has propsed. He ought perhaps to have defined mental hygiene to these deans and professors.

Dr. Corbett spoke of the need for very early training, and I think he might have gone a good deal farther than that. From the standpoint of a mere doctor it has seemed to me that at the university age, or even the graduate school age, development does not take place in such a degree in people of mature age that any hard and fast line can be drawn which will take the square man out of the round hole and tell him just where he ought to be. If Dr. Morrison includes in this the expert advice which would adjust his mental environment and allow him to exercise his real ability, it might result in very great good.

I was reminded of two exceptions. One of our State Senators, when a boy, applied for a job in a dry goods store to a very acute man, a man who was a good judge of men. He was sixteen years old at the time and wanted to go into the store and become a merchant. The man talked with him for a while and then told him he better go back to the farm, that he would never be a good merchant.

The second exception was a classmate of mine. He came to the university a very quiet fellow interested deeply in scientific work and not in other things very much. He did not speak good English and did not talk

very much anyway. The instructors did not rank him very high. He is now a highly cultured man. He has taken his place in social circles in Boston to a degree that is to be emulated, in addition to occupying an enviable place as a research chemist and teacher.

Dr. Morrison refers to an expert who is able to go farther and foresee the capacity of the man of university age than we have dreamed of. These things are so broad in their application that it is certainly stimulating to hear about them. I cannot as yet see, except as separating out those of incurable mental aberrations, how it is going to work out. But if it saves one man from the wrong track it is a good thing. If, in addition to that, he can prescribe the change in mental attitude it is desirable.

Dr. L. C. Bacon: I have listened with much interest to Dr. Morrison's valuable thesis and its discussion, and the following anecdote would emphasize the necessity for thoroughly qualified individuals to administer departments of mental hygiene and make deductions therein. Dr. Vaughan once told me that in the early eighties a well-known physiologist came to the University of Michigan and was asked by Dr. Vaughan to form an estimate of the capacity of the senior class. The first three men sent up were reported back in uncomplimentary terms as unfit for the field of medicine. One was Dr. W. J. Mayo; one our Brainerd friend, Dr. Courtney; and one was a distinguished eastern man—I am not sure of the name. The notable careers of these men coupled with the eminence of the physiologist would suggest that there are many factors in the mental processes of young people which cannot be "measured by rule of thumb."

Dr. Ramsey: I think Dr. Richard Smith of Boston made an interesting experiment in a boys' school. He made a careful study of the physical condition of the students, with the result that two or three of the boys at the foot of the class were soon transferred to the head of the class. He at least demonstrated the effects of the physical health upon the mental condition.

Dr. Morrison, in closing: The subject is a perfectly enormous one, and after I got started on it I was appalled. The paper was more of an effort to find out if we could make a further study and how it might best be done.

As Dr. Corbett has mentioned, the ideal time for mental hygiene is in early childhood. But there are many children who carry along all right at home and do not break until they are thrown on their own, and I think that they should have an opportunity to turn to some one who could give them the proper advice. I have talked with two or three friends who had been to different colleges. One told me that what saved him was having some very good upper classman friend who straightened him out. Other cases need more profound advice.

Dr. Jones brought out the fact that some Phi Beta Kappas did not make good. They made good in their studies in college; why not out in the world? That is what we would like to find out. According to Army reports there are great numbers of people who are unable to go beyond the fifth grade, but the men and women who are going to colleges have better mentality. If some of the men and women who are particularly brilliant are failures, why are they failures? Dr. Paton brought up this question of mental hygiene in the universities at the last American Neurological Association meeting. About half of those discussing the question saw great difficulties in its practical application, while others felt that some attempt should be made to introduce it. Personally, I feel as if I really know very little about how we should approach this.

Why not do some further investigating in the universities to see whether this work really needs to be carried on there?

The trouble with many of us is that we avoid facing certain facts. Some of the men coming back from war developed marked nervousness. They had been through periods of extreme danger and had seen things, heard things, and done things which they wished to forget. Instead of adjusting themselves, that is, facing these facts, they suppressed these disagreeable thoughts. As a result they were restless, could not sleep, or had bad dreams. They had faced certain things which they had to face. One must face a situation and adjust himself to it. When you adjust yourself to a situation it does not trouble you any longer. It is the situation which is not faced squarely and the thoughts which are repressed that trouble us.

Harry P. Ritchie, M. D., Secretary.

## NEW AND NON-OFFICIAL REMEDIES

During December the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

Powers-Weightman-Rosengarten:
Arsenobenzol-Billon.

Merck & Company:
Digitan Ampules (for Hypodermic Use).
Digitan Ampules (for Oral Use).

*Ven Calcium Cacodylate Ampules,* ¾ grain: 1 c.c. contains calcium cacodylate-Ipco (see New and Non-official Remedies 1922, p. 55), 0.05 gm. (¾ grain).

*Ven Calcium Cacodylate Ampules,* 1½ grains: 1 c.c. contains calcium cacodylate-Ipco, 0.097 gm. (1½ grains).

*Ven Calcium Cacodylate Ampules,* 3 grains: 1 c.c. contains calcium cacodylate-Ipco, 0.195 gm. (3 grains).

*Ven Calcium Cacodylate Ampules,* 5 grains: 1 c.c. contains calcium cacodylate-Ipco, 0.324 gm. (5 grains).

*Ven Calcium Cacodylate Ampules,* 7 grains: 1 c.c. contains calcium cacodylate-Ipco, 0.453 gm. (7 grains). Prepared by the Intra Products Co., Denver, Col.

*Mercurialized Serum-Lederle for Intravenous Injection.*—Each package contains the equivalent of 1/3 grain (0.022 gm.) of mercuric chloride in 8 c.c. normal horse serum. The initial dose is 1/12 grain of mercuric chloride. This may be gradually increased to 1/3 grain. For a discussion of the actions, uses and dosage of mercurialized serum, see New and Non-official Remedies 1922, p. 189. Lederle Antitoxin Laboratories, New York.

*Silvol.*—A brand of protargin mild-N. N. R. (See New and Non-official Remedies 1922, p. 326.) Silvol is a compound of colloidal silver with an alkaline proteid and contains

about 20 per cent of silver. Parke, Davis & Co., Detroit. (Jour. A. M. A., Dec. 9, 1922, p. 2001.)

*Arsenobenzol-Billon.*—A brand of arsphenamine-N. N. R. For actions, uses and dosage, see New and Non-official Remedies 1922, p. 43. Arsenobenzol-Billon is marketed in ampules containing, respectively, 0.1, 0.2, 0.3, 0.4, 0.5, and 0.6 gm. of arsenobenzol-Billon. (Jour. A. M. A., Dec. 16, 1922, p. 2085.)

## PROPAGANDA FOR REFORM

*Silicon in Tuberculosis.*—In Germany the use of preparations of silicon in the treatment of tuberculosis has been proposed on the assertion that silica was found in calcified tuberculous lesions and lung stones, and that consequently silicon, as well as calcium, is an important element in the formation of the beneficent scar tissues whereby the lesions are healed. However, Mayer and Wells of the University of Chicago find that the content of silica is no larger than one finds in comparable uncalcified tissues of adults. The use of silicon in therapy requires better evidence than is now available. (Jour. A. M. A., Dec. 2, 1922, p. 1935.)

*Neutral Acriflavine in Septicemia.*—Neutral acriflavine has been used intravenously in septicemia and similar conditions, but the available evidence does not demonstrate the value of the drug in these conditions. Also, the available evidence is insufficient to judge whether the intravenous use of the drug has dangers other than those inherent in intravenous medication. (Jour. A. M. A., December 9, 1922, p. 2023.)

*"Esterol" Not Admitted to N. N. R.*—"Esterol" is the proprietary and non-descriptive name under which the firm of Frederick Stearns & Company markets benzyl succinate. Benzyl succinate has been admitted to New and Non-official Remedies. Its properties are similar to those of benzyl benzoate, but being insoluble it is almost tasteless and does not produce gastric discomfort. The Council on Pharmacy and Chemistry declared the proprietary brand of benzyl succinate sold as "Esterol" inadmissible because: (1) Stearns & Company are neither the discoverers of the product nor of the therapeutic properties and therefore are not entitled to apply a proprietary name to the product. (2) The labels of the trade packages contain recommendations for the use of Esterol in dysmenorrhea, asthma, colic, hiccup, and thus advertise it indirectly to the public. (Jour. A. M. A., December 16, 1922, p. 2102.)

*Cluttering Up Pharmaceutical Nomenclature.*—Esterol is Frederick Stearns & Company's proprietary name for benzyl succinate. The product *per se* is unobjectionable. The fundamental objection to Esterol and the chief reason for its non-admission to New and Non-official Remedies is its name. A multiplicity of names for any one medicinal substance is against the interests, not only of scientific prescribing, but also of public welfare. When acetanilid was first introduced under a thousand and one names, cases were reported in medical literature of physicians calling for acetanilid under two or more names in the same prescription. More recently there was the ridiculous duplication of names for hexamethylenamin. Later yet came the even greater duplication in the case of phenophthalein. Had Stearns & Company been content to market their brand of benzyl succinate as benzyl succinate-Stearns, the product, as far as the name is concerned, would have been acceptable for New and Non-official Remedies. Such a name would give the firm any legitimate protection which it should desire and at the same time give physicians full information about its composition. (Jour. A. M. A., December 16, 1922, p. 2090.)

*Hayes Asthma Remedy.*—This preparation is exploited by P. Harold Hayes, Buffalo, N. Y. Some years ago, six of the seven remedies were examined. The analysts reported one, a cough medicine, to contain oils of turpentine, peppermint, etc., emulsified and sweetened. A second contained potassium iodid. A third preparation was reported to contain potassium, sodium and ammonium iodid. A fourth preparation contained iron peptonate. A fifth preparation consisted of capsules containing quinin sulphate. A sixth preparation consisted of pills which contained as their active constituent resin of jalap. (Jour. A. M. A. December 30, 1922, p. 2248.)

*Two Electronic Diagnoses of Abrams.*—Instead of the blood of a patient, a physician sent the blood of a guinea pig to one J. W. Eisiminger of Oklahoma City, who operates a physico-chemical laboratory for the electronic reactions of Abrams. Eisiminger is an osteopath. The report received by the physician on the patient, whose history was sent in, reads as follows:

"Congenital diminished resistance, cerebro-spinal and digestive strain, 39 ohms. Metatastic Carcinoma, 6 Liver and right colon, Tuberculosis Genito-urinary tract, 6 ohms. Colisepsis, 4 ohms. Streptococci, infection, 12-25 ohms, in gall bladder region."

Another physician states that he sent Eisiminger some sheep's blood on blotting paper with a blank supposedly for a fifteen year old boy. This physician received the following diagnosis:

"Congenital diminished resistance cerebro-spinal strain 38 ohms. Metastatic carcinoma of left lung and pancreas, 8 ohms. Neisserian infection genito-urinary tract, eyes, 4 ohms. Tuberculosis of genito-urinary tract, 4 ohms."

However, it is possible that these blood specimens were not taken in subdued light and that Eisiminger was not informed if the subjects had red hair nor of their religious faith—factors which are said to play an important part in diagnoses made by the Abrams method. (Jour. A. M. A., December 30, 1922, p. 2247.)

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# COMMUNICATIONS

December 27, 1922.

To the Editor:

At a meeting of the Rice County Medical Society on December 20, 1922, after a most thorough consideration of the treatment and prophylaxis of Tetanus, the society went on record as being in favor of Tetanus Antitoxin being furnished by the State Board of Health to the public under some such method as is now in use with diphtheria antitoxin.

The society further decided to urge the adoption of this measure by many ways possible.

Very truly yours,

C. M. ROBILLIARD,
Secretary, Rice County Medical Society.

# BOOK REVIEWS

## BOOKS RECEIVED FOR REVIEW

ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES. 1922. Washington. Government Printing Office. 330 pages.

WHAT COMES FROM WHAT, OR THE RELATIONSHIPS OF ANIMALS AND PLANTS. Charles L. Abbott, St. Paul. 48 pages with diagrams. Published by the author, 600 Ivy Street, St. Paul. 1922. Paper, $1.00.

TEXT-BOOK OF PEDIATRICS. Edited by Professor E. Feer, Director of the University Children's Clinic, Zurich. Translated and edited by Julius Parker Sedgwick, B.S., M.D., Professor of Pediatrics, University of Minnesota Medical School, and Carl Ahrendt Scherer, M.D., F.A.C.P., Duluth, Minn. First edition in English. 917 pages. 262 illustrations. Philadelphia and London. J. B. Lippincott Company. Cloth, $8.50.

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THE FEMALE IMPERSONATORS. Ralph Werter-Jennie June (Earl Lind), 295 pages. Medico-Legal Journal, 1922.

Claiming as fellow Androgynes such an imposing array of immortals as Alexander the Great, Julius Cæsar, Michelangelo, Frances Bacon (who, he claims, wrote Shakespeare's masterpieces), our modest author has appointed himself the spokesman and defender of the "third sex." It is a happy circumstance that all of the above mentioned, excepting himself, are dead, otherwise we might hear of another Androgyne murdered. The book is ostensibly a plea for toleration toward homosexualists or bisexualists as the author prefers to term them. The fact that he himself boasts of belonging to this class of mental cripples makes it an open question whether his motive in writing the book is not rather to appease his appetite for admiration and to recall the pleasant memories of his conquests in the character of Ralph-Jennie, the "Færie" charmer.

He contends that the practices common among this type of degenerates are as natural to them as heterogenous satisfaction is to normal people; that such practices are no more criminal than is overindulgence of normal passion, and that it is only through prudishness and ignorance that they are condemned and punished. He points out that artists and æsthetics are frequently bisexual in their habits and that such practices were formerly in good repute. He attempts to show through a superficial review of the history of the world that the outstanding geniuses were products of those times when homosexuality was prevalent; advances the argument that many great artists were homosexual and points out that at present sex digression is tolerated in the older civilization of Europe. He argues that there is no relation between homosexuality and the gradual weakening, progressive effeminacy and final disintegration and decay of a once virile race.

All of the statements which he makes are certainly open to discussion. As to the harmlessness of homosexualism, perhaps the act itself performed upon a "full fledged" male is harmless; but there are two other very pertinent questions to be considered. In the first place, supposing the acts to be confined to adults (which they are not) the venereal disease incidence must necessarily be high. The author admits syphilis and its contraction in such a promiscuous class must be frequent. With the Legislature of Illinois contemplating a penalty of from five to twenty years in prison for anyone who transmits a venereal disease and a charge of second degree murder placed against parents giving birth to stillborn syphilitic babies, the penalizing of Androgynes on this charge alone would seem justified.

So far we have only considered the immediate effect upon adults, but unfortunately these people not infrequently seek boys from six to fourteen years of age, boys in the exceedingly plastic stage of moral development. It is not possible for anyone to excite their passions without an indelible trace of it upon their consciousness. Has the writer any psychological data to expound upon this subject? Can he really believe that such acts are harmless to young boys? It is not reasonable to suppose that in such a case the harm done would end with the performance of the act. It is a great deal more logical to expect a scar of an ineradicable nature to be left upon their minds. Given the knowledge of the existence of such practices, would boys not be apt to seek the persons who perform them, form an attachment to them and gradually drift into the underworld which tolerates such friendships? Even in the improbable event that the first act was the last, no action we perform is without a permanent mark upon our psyche.

If there were no other objections to be raised against the toleration of Androgynism, if we could disregard all moral and religious objections to it, the two just stated more than counterbalance the reasons brought forward by the author for its being permitted. In other words if the Androgyne be proven a disseminator of disease and a corrupter of youth, the case against him is fairly complete.

As to the claim of the author that certain great geniuses were Androgynes because their work or habits showed traces of bisexualism, this argument may be disposed of in this way: In the case of Alexander and Julius Cæsar, the author admits indulgence from necessity among soldiers. The only other evidence which he advances is that they were clean shaven and neglected their wives. Conviction on these two points would incriminate quite a number of men. In regard to the geniuses of the Renaissance, Raphæl, Michelangelo and Shakespeare, one must have a knowledge of the times to understand the case. The disintegration of Roman civilization in Europe was followed by the Dark Ages. During this period of intellectual barrenness such practices as the author is addicted to were rife.

While as a plea for toleration toward Androgynes the book is a failure, it must be admitted that the author has written a book which is illuminating (whether by accident or intent) as an exposition of Androgyne psychology and which forces the reader to accord to these people the sympathy incident to a clearer understanding of their deplorable condition. This sympathy is somewhat more grudgingly accorded to the author because of his complacency, and his obvious pride in his condition obtrudes itself to an

obnoxious degree. On the whole the book leaves one divided between pity and disgust for members of the "third sex." It appears certain that they are mentally abnormal, that their practices are harmful and that they should not be left at large; but one is doubtful whether the penitentiary or the insane asylum is the proper solution of the problem.

FRANK WHITMORE.

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CLINICAL MEDICINE. TUESDAY CLINICS AT JOHNS HOPKINS HOSPITAL. By Lewellys F. Barker, M.D., LL.D. W. B. Saunders & Co. $7.00.

In this book of six hundred and seventeen pages are presented thirty-one selected cases taken, as the title indicates, from Dr. Barker's Medical Clinics at Johns Hopkins Hospital.

Teaching by case histories and findings always has held a high position in the past and should continue to do so. All of the cases in this book are highly instructive, well presented, with the principal point in each driven home in no unmistakable manner.

Dr. Barker's command of the English language and his use of it make the book easily read, although at times his meaning would be clearer if less involved sentences were used. The volume could be rendered smaller by the elimination of many apparently unnecessary dialogues between interne, patient and Dr. Barker, but even this fault does not detract from the real value of the book, which takes one back to his undergraduate days of the clinic amphitheatre, where we all have listened to the words of wisdom from our experienced preceptors.

EVERETT K. GEER, M.D.

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A PRACTICAL TREATISE IN DISEASES OF THE SKIN. By Oliver Ormsby, M.D., Professor and Head of the Department of Skin and Venereal Diseases, Rush Medical College. Second Edition, 1166 pages. Illustrated with 445 Engravings and 4 Plates in Color. Lea & Febiger, Philadelphia, 1921.

Following the regular text-book outline and style Ormsby presents a comprehensive treatise on Dermatology. The text is clear and concise. Symptoms, etiology, pathology, and treatment are given in orderly sequence. Bibliography and references are given in footnotes. The book is thus an example of orderly arrangment. This fact makes it a most useful reference for the specialist in Dermatology.

Under treatment, general internal medication, diet and hygiene are duly stressed, something oftentimes lacking in text-books of dermatology. The book merits a high place among text-books.

E. C. GAGER.

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## HOW TO CHOOSE A DOCTOR

Replying to an inquirer who wants to know how to be governed in the selection of a physician, Dr. Wm. A. Brady, in the *Chicago News*, gives the following pointers for the guidance of the layman in choosing his doctor:

First, the name of the good doctor is rarely seen in print.

Second, in making examinations he requires the patient to remove clothing which may interfere with the detection of signs and symptoms.

Third, when he is out of town he is attending a medical meeting or taking a brief postgraduate course.

Fourth, he asks frequently for consultations or refers patients to colleagues for special examinations, and when his patients die asks for autopsies, all because he never gets through studying medicine. This is why he buys so many books and subscribes to so many first-class medical journals.

Fifth, he prescribes simple medicines to meet particular indications at the particular time, and not "ready-made" stuff with which he has recently been "sampled." Or, perhaps, he prescribes no medicine at all, but merely lays down some common-sense rules for the guidance of his patient.

Sixth, he never guarantees or promises a "cure," because to do so would be dishonest.

Seventh, he is invariably a stickler for the observance of the rules of ethics.

Eighth, being an honest laborer, he deems himself worthy of his hire and demands payment.

Ninth, he does not put a patient off with the evasion, "weak lungs," nor does he perpetrate the near diagnosis, "catarrh." He makes a definite diagnosis or frankly admits his inability to do so.

Tenth, "he will do anything short of murder for a loyal patient."

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**Information regarding new locations, or physicians looking for locations, should be addressed to the office of the Secretary, 403 Central Bank Building St. Paul.**

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PHYSICIAN WANTED in a wealthy German community 70 miles from St. Paul. Village of 600. High school. Unexcelled water. Address MINNESOTA MEDICINE, B48.

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PHYSICIAN WANTED in good North Dakota town. Large territory. Good drug store. Good farming country with large crop. A snap for good man. State qualifications in first letter. Address B46, MINNESOTA MEDICINE.

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HANLEY FALLS, MINNESOTA, offers an excellent opening for a doctor. Communicate with President of Commercial Club.

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A RESORT TOWN near Minneapolis having a summer population of 15,000 and an all-year 'round population of 1,500, needs a doctor. Two drug stores and one doctor in town now. Address A. O. G., care Minnesota Medicine.

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WANTED—Doctor who is looking for an opening. Good territory. For particulars write to Dent Commercial Club, Dent, Minnesota.